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MAGIC AND MEDICINE*

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It is a pleasant academic custom, established of late years in this school, that the incoming students shall be welcomed, not only by the president of the university, but also by a member of the faculty, through the medium of an address, fortunately somewhat delimited as to time, usually devoted to some general aspect of medical practice or to some phase of the contributary sciences. This year the honor has fallen upon me, and I purpose to use the opportunity to call your attention to an important aspect of human psychology which has existed as long as the human race itself—was, indeed, fully developed before medicine as such was divorced from religion—but now remains chiefly as one of the subconscious vestiges of the mind—a spiritual remnant, quite as in the body we still find vestiges of the gill-slits inherited from our far-distant ancestors who swam about in some primeval sea. And just as these branchial clefts and arches remind us of our lowly anatomic origin, so, also, do the mystical yearnings of the mind point back to a period when the cave-man looked out upon a world full of terrifying portents, which, his spiritual advisers, after proper incantations, warned him could be overcome only by suitable offerings to the gods.

An examination of the relations between magic and medicine during that early period, although of great anthropologic interest, we must of necessity pass over, turning instead to our own day, to this complex and puzzling age which we so fondly think is governed by the cold light of reason, and in so doing we must, to paraphrase Spinoza, be most careful not to laugh at the actions of mankind, not to groan over them, not to be angry with them, but to try to understand them.

A full century has passed since Waterloo marked the freedom of Europe from the militaristic domination of Napoleon, and offered to man that liberty of thought and action which was acclaimed by all but a few reactionaries as enabling each to accomplish what had before seemed impossible: the releasing of all individual energies for moral, social and scientific achievement. And what has not that century of supreme and united effort brought forth! Today we boast such freedom for the soul that no one knows quite what to believe, and so believes that which he prefers; so definite and final a code for moral action that the minds of the people of this country oscillate between peace at any price and war at any cost; such widespread brotherly love that never since the world began have in one short year so many men fought face to face and laid down their lives with unimaginable heroism for what they thought a duty. Never have the benefits of human culture and efficiency been so perfectly demonstrated on a recalcitrant world by bayonet thrusts and shrapnel. The marvelous developments of chemistry are far less clearly shown in the synthesis of useful dyes and healing drugs than in the ability conferred on mankind to destroy his fellow creatures by suffocating gases or by liquid fire of such exquisite potency as to make death from that used by the somewhat illiterate and incompetent Greeks almost a pleasure, and to cause Torquemada to blush with envy.

Nor have we been willing to confine the blessings of this modern civilization, born of the new freedom, to our own people, but have generously, and occasionally forcibly, conferred them upon other and more benighted races, so that today no Chinaman need suffer for lack of opium, no South Sea Islander be denied his alcohol and syphilis, no Indian but can enjoy, with some slight restrictions, the commingled benefits of whisky and tuberculosis.

With such a record can any one deny that the human race is approaching spiritual perfection? Has not our own country set the pace? Have we not more universities than any other, even though certain safely endowed cynics *do* call attention to the annoying fact that some institutions still confer their Ph.D. degrees *in absentia*, after only a moderate amount of correspondence and the receipt of a small fee? Have we not more popular, if somewhat superficial, education than any other country in the world? Do we not show the wonderful results of civilization in that we manufacture more pig iron, mine more coal, send more telephone messages, consume more "patent medicines," than any other?

In response to this revaluation of all values, medicine too has risen from its humble beginnings in priestly incantations, to a point where its leaders declare it to be a science and no longer simply an art. Today we smile at the cautery and boiling oil of a surgery of bygone ages, for now the burns of radium and Roentgen rays, in virtue of their magic qualities, have, as Sganarelle has said, "changed all that." The mere mention of the prescriptions of a Malay magician, embracing scorched cat's whiskers and other equally valuable remedies, brings a smile to the face of the recent hospital graduate who prescribes from a sample package of the latest synthetic drug from Germany, just left at his door by the postman and proved to be of the highest value, because, first, the

* An address delivered at the opening of the College of Physicians and Surgeons, Columbia University, New York, Sept. 29, 1915.

advertisements says so, and, second, it has been tested on ten dogs and twenty rabbits—a much more scientific method than trying it on man. The fortunate patient also escapes the bad tasting mixtures of his childhood and knows that his physician is progressive and ahead of the times, since no article commending the drug has as yet appeared in the monthly magazines.

What country lad, suffering from that digestive remorse which so often follows an assault on a neighbor's apple tree, but would appreciate the modern improvement over castor oil and minted ginger, to be found in psychotherapy or even the Emmanuel movement, or, if willing to stray from the straight and narrow path of regularity, would not prefer absent treatment from a Christian Scientist or manipulation by an osteopath?

What pious spinster but would acknowledge the glories of modern therapeutic achievement in the discovery which enables her to enjoy in the innocuous form of a widely advertised tonic her daily or thrice daily cocktail, and still remain a zealous and esteemed member of the W. C. T. U.?

From these serene heights of scientific medicine we can well afford to treat with contempt such unfortunate aphorisms as that attributed to the greatest of medical comedians: "The only thing the matter with the quacks is that they cure so many people," and to regard with satisfaction the ominous gloom which has suddenly snuffed out the literary light who composed that libel on the medical profession, "The Doctor's Dilemma."

Yet sometimes this wonderful science of medicine does not seem to be a wholly satisfactory guide. You, as future practitioners of medicine, have still before you the pleasure of dismissal from the care of some small patient on whom you have spent all the scientific acumen with which your teachers will endow you in the next four years, because in grandmother's day it was not necessary to make such a fuss about baby's milk. "All of her children, and she brought up ten, took milk straight from the cow, and nobody ever thought of modifying it." And when after you have in desperation told the mother of the next small hopeful that it will be enough just to put a little lime water in the bottle, and have been promptly displaced by Dr. Blank, who is "so much more intelligent because he knows exactly how many calories each bottle contains," it will be small comfort that you are perfectly well aware of the fact that Dr. Blank never heard of a calory until a few weeks before, and thinks it means something about germs. When you have been replaced because you listened to grandmother's chest with your ear, showing that you knew nothing of modern medicine, or supplanted because you did use the offending instrument, showing that you must have bad hearing and really could not know that she had pneumonia from your knowledge of her constitution; when, as I say, all these things have happened, you may begin to wonder whether there is not some defect in your medical education. Then, when you see the street in front of the house of Dr. Blank, whose medical standing is questionable, but of whose financial ability there is no doubt, filled with the automobiles of the rich who are taking the latest sure cure for cancer or tuberculosis or having their souls analyzed by the newest method, which "feels just like the confessional and reveals such awful things in one's past, but must be all right because there was a long article about it in the September *Century Magazine*," it will be slowly borne in upon you that there must be some things not taught in the curriculum.

And what is the foundation for all this lack of appreciation of the last word of medical science? We must apply a sort of freudian analysis to the collective mind of the community, and in so doing it is extremely important that we remember the changed conditions of thinking which have come over medicine, for to these is due some of the present condemnation of the profession. In the older days all possible facts on which to base a diagnosis were obtained by talking with the patient or his family, and by making a simple—usually a very simple—examination of such portions of his body as were visible without removing more clothing than was conventionally considered to be within the limits of modesty. The discussion of such facts between a physician and a consultant, and even the mental processes by which the diagnosis was reached, bore largely on matters with which the patient and his family were familiar, and the only way in which the practitioner could gain the desired effect of great wisdom was by concealing his method of reasoning and the nature of the medicine prescribed. The more ignorant he was, the more obscure were both. Hence, the further back we go in the history of the art of medicine, the more mystical the methods of diagnosis, the more complex and fanciful the drugs.

Nowadays, no attempt is made by the intellectually honest physician to obscure the methods of diagnosis, or the results of the scientific reasoning, nor is there anything mystical in the treatment. We sift the testimony of the patient and his friends in the light of the known untrustworthiness of human evidence, and ask that a large portion of the diagnostic information be written records obtained often by chemical or biologic methods beyond the manipulative skill of the physician himself. The stress so often laid on such records has led the patient of today to feel that if he has access to them he can make as good a diagnosis as the physician. Indeed, it is not uncommon to have one of the modern, highly educated neurotics bring out a vast pile of analyses, sometimes so poorly done as to be of no value, lay them before the physician, proceed to inform the latter of the real condition from which he is suffering, and, then, if not flattered by instant approval, leave for some more amiable and perhaps more worldly healer, but ultimately to form the material on which the quack fattens his bank account.

Thus it is that a not inconsiderable portion of the community, especially those who have achieved success through their business ability, the while they glibly state that the physician is a fool in business, forget that the converse also may be true, and on the intellectual basis of a course in medicine obtained from the Sunday supplements of the daily press and a few popular magazine articles on the medical fads of the moment, pass judgment on the methods and results of medical art, which would be amusing if they were not so pitiful. For none of these men would for a moment consider the investment, even of other people's money, in a business scheme of which they had so little fundamental knowledge as they have of the medical subjects they airily discuss. The inevitable result of this superficiality in judgment, largely due, I believe, to the lack of thoroughness and mental discipline in our popular education is an underestimation of the real ability of the physician and an overemphasis on the practical

value of surgery, both temporary phases certain to be adjusted in the course of time.

And so we see as a consequence that in its search for something to satisfy its desire for magic, a something which the scientific physician no longer supplies, a portion of the public has turned in another direction which leads to Christian Science and osteopathy. Each of these is singularly adapted to fill a mind of a certain type: the first, because of its aura of religion; the second, through its appeal to the practical as "doing something." The era of indiscriminate pill-giving by the physician having passed, it is hard for a patient to surrender a considerable fee for mere advice — usually irritating because so evidently just; but a half hour's massage and manipulation have a real cash value, even if they do not cure all maladies. The practitioners of each of these trades are well endowed with that insight into human nature to which the physician is often indifferent, and know how to supply that suitable atmosphere of mystery for which so many still yearn.

Perhaps the public is not altogether at fault in its attitude toward some phases of medical practice, for an insidious form of higher quackery is not infrequently exhibited by a certain type of physician who through the use of a majestic array of instruments or reports of complicated chemical analyses, of the real import of which he is often ignorant, seeks to conceal his intellectual nebulosity and to impress his more desirable and wealthy patients with his scientific equipment, just as did the doctor of a generation past with a dusty microscope, never disturbed from beneath its bell-jar, or the quack of a still older period, so lovingly satirized by the Dutch artists, with his consultation room decorated with skulls and stuffed reptiles. An appeal to magic all of this, though the modern chaser of diagnostic ichthyosauri may not see the connection. Sometimes the patient does.

A remarkable example of crowd psychology, affecting both the medical profession and the lay public and showing the appeal of the occult, was seen in connection with the Friedmann tuberculosis cure a few years ago. The cure was exploited, apparently, by a syndicate which shielded itself behind the discoverer, who was probably perfectly honest in his belief that the bacterial cultures which he used had some value in the treatment of tuberculosis. In Germany the remedy met a cold reception, but in this country, owing to the great advertising value of the daily press, to the pseudoscientific way in which the whole question was ventilated, even before Dr. Friedmann's appearance in the United States, and to the opposition of the medical profession to the use of this secret remedy, considerable sympathy for Dr. Friedmann was aroused, even among the intelligent, and there resulted a rather bitter feeling toward the medical profession as jealously preventing the public from benefiting by a marvelous discovery — somewhat as today the attitude of a portion of the press on the subject of "twilight sleep" is that the physicians have banded together to defraud the people of something valuable. If the newspapers would only publish the facts behind all these affairs, the public would be quickly disillusioned; but cold facts are rarely of news value, and we must remember the retort of Charles A. Dana to a young reporter who approached him with a news item concerning a man who had been bitten by a mad dog. "That is no news," said Mr. Dana; "go out and find a mad dog that has been bitten by a man, and we will give you plenty of space for the story." It is the sensational which appeals to the mass, not necessarily the true. When once a sensation gets well under way, it is wonderful to see how it is reflected from one portion of the country to another, appearing again and again in more and more distorted form, until in the boiler plate page of the country weekly it finally loses all semblance to the original. Until we realize that the vast majority of the people of this country read nothing but the newspapers, and have few opportunities for obtaining accurate information by word of mouth from physicians or informed laymen, we will not understand how merely printed matter can have such great influence. The wildest newspaper statement is absolutely believed, and however shrewd the individuals may be, yet when gathered in a group or united by a common emotional topic they undergo that curious physical alteration which Voltaire, the first of the crowd psychologists, noted — their ears elongate. And what would be rejected as nonsense by the individual is accepted by the crowd, which is swayed by self-interest or self-pity, or that love of the mysterious bequeathed us by our cave-man ancestors.

Nor does the magic of a phrase stop at the crowd; it involves men of scientific training, and illustrates another aspect of mystery in the field of medicine. Let me read you a paragraph from the report of the hearing before the Committee on Mines and Mining of the House of Representatives of the Sixty-Third Congress, Jan. 19, 1914:

> Radium goes further than surgery, like the blessed light from heaven above, bathes the part, throws its gamma rays, which are its active rays, into the part, acting on all the myriad microscopic cells like millions of microscopic knives to destroy them or like a lash to drive them back. In other words, radium will not only do what surgery does, but it goes beyond it and takes a class of cases which are utterly beyond surgery. It has wonderful possibilities in chemistry and physics—marvelous possibilities. One cannot let oneself dream about it.

Of course this is emotionalism, not reality; but why does this man of education and culture speak in this way? What is there in this element radium which so warp's men's judgment that they tell only of successes and forget to mention the vastly greater number of failures to cure? First, there is its great rarity. The human race has always treasured things difficult to find or to make, even if of little intrinsic value. Then, in this new element, also, are centered a fascinating series of qualities, simple enough today to the physicist but still mystical to the public. Radium gives off heat; its atom explodes into a heavy metal and a gas which bombards the walls of the container; it gives off rays which will pass through a foot of lead and take a shadow photograph on the other side of this dense mass of metal; it will burn the tissues just as the Roentgen ray burns, somewhat less rapidly and less effectively than a red-hot piece of iron, but much more quietly and mysteriously, since the burn does not appear for a week or more. The writers of scientific papers even speak of the "magic power of radium," but magic only because we do not understand it; and when its physical qualities are fully understood we shall hear much less about the use of radium in the treatment of cancer. For in spite of all the statements made in the daily press about the wonderful cures which radium produces, we know today that it will certainly cure only a very small number of cancers

and will do nothing which cannot be done by surgery. The result of the furore and publicity is, however, that it is now not always possible to get patients to submit to surgery for the removal of a tumor; they are so anxious to be treated with radium. The farmer in the farthest New England hills, reading in his weekly paper that radium is a certain cure for all kinds of cancer, comes to town refusing operation which might save him, only to fall into the hands of the nearest quack who has a little powder in a tube.

Such is the power of the press, molding the uncritical opinions of the people in virtue of the mystical which it celebrates. This influence of the mystical affects us all. Do *you* refuse to open an umbrella in the house, or cross between the carriages of a passing funeral? Do *you* avoid going underneath a standing ladder, or knock on wood lest your boasting bring bad luck? Probably you do, not because you are superstitious, but because, as a witty friend of mine once said, when accused, he liked to be on the safe side.

And now we must pause, not for lack of further apt illustration, new examples of which will soon be furnished you from your own experience, but because the natural limitations of human attention must be respected, and drawing in the net, survey the catch, dealing leniently with the human frailties within. For are they not a part and parcel, obscure and stupid as they seem, of that yearning for a power and perfection beyond the mere limitations of the flesh, which has led men on for all time? Do they not represent a blind appeal to something superior and more permanent than human life itself, something not evident to the senses, too subtle for the balance of the physicist, not to be captured in the test tube of the chemist, capable of diversion to evil ends when exploited by the unscrupulous, of infinite power when used by the wise for spiritual development?

The remedy for the evils is simple enough — education. With the deepening of real knowledge comes intellectual charity, while a diminution in the sensationalism of the press and a corresponding increase in the clarity and honesty of such medical information as is suitable for the public, the really excellent educational campaigns now being conducted by physicians through the publications of medical societies and reports of public health officers, and the most effective propaganda of the American Medical Association and of certain publicists who have raised their voices against the widespread sale of quack medicines — all these will abate somewhat the density of popular ignorance. For it is our duty as physicians to lead in this intellectual reform by refusing to be limited by a narrow professionalism, both in education and in practice, and by entering more and more deeply into the life and problems of those for whom we care, to regain that position of intellectual leadership which some of our great predecessors held in virtue of the fact that they were, first of all, great men, and only secondly, accomplished practitioners of an ever-widening art. And it is with that suggestion that I welcome you to the study of the broadest of all professions, whose interests touch all sciences and to which nothing human is without value.

Laboratory and Clinical Examinations.—Not saving of time, or of thought, is the primary object of any diagnostic method of value, but the more complete and accurate knowledge of the patient's condition.—George Dock, *Journal of Laboratory and Clinical Medicine.*

HOSPITAL EFFICIENCY AS PRODUCED AND MEASURED BY A FOLLOW-UP SYSTEM *

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In the medical world no less than in business, efficiency has become a recognized essential attribute. We have but little use—and rightly—for the hospital which is not efficient. But just what do we mean by hospital efficiency? The term suggests to our minds a capable administrative board, a staff of skilled physicians, good team work and organization, and adequate and up-to-date equipment.

These *are* essentials to hospital efficiency. It is because of such standards that in the minds of the general public the word "hospital" is no longer synonymous with impending death.

Standards are, however, but relative. They must be constantly changed and raised to accord with advancement in medical knowledge.

Modern medicine, twentieth century medicine, includes in its scope not only the cure of disease but also the prevention of illness.

The children's medical department of the Boston Dispensary includes a hospital for children of twenty-five beds and an outpatient clinic receiving over 14,000 visits a year. We have believed that, especially in dealing with children, the best results can be attained only by safeguarding the health of the patient after discharge, and have included in our responsibility the medical supervision of the child beyond the hospital or curative period. To undertake this plan intelligently, or indeed to make any plans for the child's health, it is necessary to know more about the child, especially in regard to home and living conditions, than can be learned from hospital histories and physical examination. The Boston Dispensary Hospital for Children has therefore adopted the plan of having a member of the social service staff visit the home of each patient admitted to the hospital. The home environment as regards location, hygienic conditions, social and economic circumstances is noted. This information is obtained with the spirit and attitude of planning for the interests of the sick child and not as a "third-degree" probing into family and personal matters. As soon as the visitor has the home situation well in mind, a bedside conference is obtained with the physician who has had charge of and has studied the medical condition of the patient. The information each has obtained is collectively considered. The physician makes immediate use of the information obtained by the visitor in planning the length of time it will probably be necessary to keep the patient in the hospital. This often makes a decided difference in the methods of treatment employed, and often aids the physician to understand better the clinical picture presented by the patient.

The physician and the visitor, having the home and medical conditions in mind, then plan the course to be followed on the discharge of the patient from the wards.

* Read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

If the home conditions are suitable, and the family is in a position to employ its family physician to supervise the convalescence of the case, the responsibility of the hospital is ended after the visitor has seen that the child is actually placed under the family physician's care.

If the character of the case is such that long and close supervision is necessary, as for example a feeding case, and the patient lives at some distance from the dispensary, it may be referred to the nearest "milk station" or "well baby clinic." The physician and nurse at the station will then assume the responsibility for the baby's feeding, and the supervision of home conditions. In other instances, as, for example, chronic heart cases, if the home conditions, as regards hygiene, etc., are favorable, the district physician of the Boston Dispensary and the district nurse may be asked to cooperate and to provide continued medical and nursing supervision in the home. Other patients requiring continued institutional care may be referred to a suitable chronic or convalescent hospital.

In other instances, the visitor and the physician work out what seems to be the best plan for the child, utilizing existing agencies, such as child placing and child helping organizations, for this purpose when indicated. The visitor in each case sees that the arrangement is in actual operation before transferring her responsibility.

The majority of the discharged patients are referred to the children's outpatient department of the dispensary. When this is the plan adopted, the visitor, after studying the home problems and conferring with the physician in charge of the case while in the hospital, secures as far as possible suitable home conditions before the discharge of the patient from the hospital wards. After discharge, the visitor is responsible for the first visit of the patient to the outpatient department, the responsibility after admission there resting with the outpatieht department's follow-up system.

The return and continued supervision of cases in the children's outpatient department of the dispensary is effectively secured by means of a visible file index, and follow-up visits by the social service department.

The visible file index makes obvious the failure of any patient to return on the date specified by the physician in charge of the case. A postal card is sent to the patients failing to return at the specified time, and if they then fail to return, the records of the cases are presented to the physician in charge, and he determines whether or not the condition of the patients justifies a visit to the home to insure their return or at least a report on the situation.

Good team work between the follow-up system of the outpatient department and that of the hospital is rendered easy, as home conditions of patients admitted to the hospital are in many instances already known to the social worker. All that is necessary in such cases is to carry out any new measures made necessary by the emergency of the acute illness and convalescence of the patient. Whatever the disposition of the case, each patient, as far as possible, is returned at three months and one year for medical inspection by the physician having charge of the case in the hospital.

The children's department of the Boston Dispensary introduced this plan of providing medical supervision and following up discharged hospital patients for several reasons. The number of babies and children readmitted to the hospital because of reinfection, failure to convalesce properly, and intercurrent disease was extremely suggestive. It was felt that it was a distinct loss in experience for the physician in charge of a hospital patient to terminate his knowledge of the case with the patient's discharge from the wards, with no opportunity to know of subsequent developments or end-results.

It seemed unfortunate that the patient should lose entirely the personal touch with the physician familiar with the course of the acute illness. It was felt that it would be of definite value if the patient could, whenever possible, benefit by a longer supervision and plan of treatment by the same physician.

From a purely economic as well as a medical point of view, it seemed poor business to call on the resources of the hospital for the care of a patient, and secure good results, only to have in a short time the hospital again burdened with the expense of more hospital care for the same patient. This pointed to a waste of effort and money that the efficiency man of any business would promptly criticize and attempt to remedy. The physical condition of readmitted patients, and the history of the case between discharge and readmission suggested that unfavorable home conditions and improper management of the patient was, in some instances at least, responsible for the readmission. This led to a study of the home conditions of patients admitted to the hospital in 1912. This study clearly indicated that the existence of unfavorable living conditions as indicated by clinical experience was a fact and not a mere theory. Investigation of the homes of all patients admitted to the hospital disclosed conditions unfavorable to convalescence or continued health in 94 per cent. of the cases. In other words, without the knowledge obtained by these home visits and the measures taken to improve the existing conditions, the dispensary would have discharged 94 per cent. of its patients into just the kind of environment that predisposes to readmission and unfavorable results.

This rather disquieting discovery suggested that even more valuable information might be obtained by determining the effectiveness of the measures taken to remedy these unfavorable conditions as judged by the physical condition of the patients at three months and one year after discharge from the hospital, at the same time checking up the findings of the previous study as regards the existence of unfavorable home conditions. Therefore, over a year ago, a system was adopted by which the condition of a child is ascertained and recorded, as a routine, three months and twelve months after discharge.[1]

From May 1, 1913, to April 30, 1914, 245 infants and children were discharged from the hospital. The illnesses responsible for the patients' stay in the hospital were about what one might expect. A brief summary is given in Table 1.

An investigation of the homes of these patients gave almost identically the same results obtained in the previous study. Of the 245 cases, 230 (93.8 per cent.) presented definite educational or home problems. A brief summary of these problems is given in Table 2.

These figures scarcely require discussion or interpretation. They speak for themselves. Whatever

1. The blank forms used for this work will be sent to any one interested, on request to the author, at the Boston Dispensary, 25 Bennet Street, Boston.

may be the conditions as regards other hospitals, the Boston Dispensary has a definite situation to meet. Although fundamentally social, the problem obviously at once becomes medical. The measures taken to remedy these unfavorable conditions must be based on medical knowledge of cause and effect. It becomes an individual problem with each patient, to determine, from the physical condition of the patient and the character of the home, what changes are necessary or desirable to secure a good medical result.

TABLE 1.—ILLNESSES OF PATIENTS

Medical Illnesses.	No.	
Gastro-intestinal	58	
Respiratory	41	
Cardiac	19	
Congenital syphilis	10	
Genito-urinary	6	
Central nervous system	6	
Meningitis	5	
Pulmonary tuberculosis	5	
Infantile paralysis	3	
Scattered medical diseases	21	
		174
Orthopedic	26	
Surgical	25	
Nose and throat	12	
Eye	5	
Ear	3	
		71
Total		245

TABLE 2.—EDUCATIONAL AND HOME PROBLEMS

1. Educational:		
Homes presenting educational problems (such as teaching care of child, hygiene, need of treatment of other illnesses in the home; need of further medical supervision of the child)		187
Homes not presenting educational problems		58
2. Family Problems:		
Homes presenting family problems		218
Such as:		
Acute poverty	29	
Bad home condition other than poverty	44	
Illness in home	43	
Inadequate care of child other than poverty and illness	23	
Illegitimacy	17	
Homes presenting no family problem		27
3. No educational or family problem		15

The positive findings in the case of the Boston Dispensary would indicate that other hospitals, even if more fortunate in the economic and social circumstances of their patients, can scarcely claim efficiency unless this phase of the patients' welfare receives attention.

The following data appear to demonstrate two points:

1. The conditions disclosed in the study of the children's home environment had a definite bearing on the progress made by the patients after leaving the hospital.

2. The control of the patients through the follow-up system and the social service department was a factor in producing this progress.

Of the 245 patients admitted to the hospital, the condition at discharge was: well, 60 (25 per cent.); improved, 122 (50 per cent.); not improved, 21 (9 per cent.); died, 42 (16 per cent.).

Three months after discharge the conditions were: well, 57 (23 per cent.); improved, 103 (42 per cent.); not improved, 14 (6 per cent.); no record, 17 (7 per cent.); died, 54, that is, 12 who were alive at discharge died within three months. Ten of these deaths were due to conditions known to be hopeless at time of discharge.

At one year after discharge the conditions were quite different, as will be seen from the following: well, 119 (49 per cent.); improved, 47 (18 per cent.); not improved, 18 (7 per cent.); no record, 1; died, 60, that is, 6 had died between three months and one year after discharge.

It is certainly a striking fact that fewer children were well three months after discharge from the hospital than were well at the time of discharge. The data point strikingly to the conclusion that the task of restoring and maintaining the health of the patient is far from completed on the discharge of the patient from the hospital ward. It is to be borne in mind that these patients were all children mostly from poor homes and that about half were babies. When this is taken into consideration, it is encouraging to note that of 203 patients discharged alive, only 18 died during the year after discharge, and 12 of these cases were known to be hopeless at the time of discharge. Only 6 deaths were the result of intercurrent disease or unexpectedly unfavorable convalescence from the hospital illness.

On the other hand it is highly encouraging to see the steady and substantial improvement as the year advances. Of 103 patients recorded at three months as "improved," 49 were well at the end of the year, 45 were further and much improved, and only 9 were not improved. Of 14 "not improved" at three months, 3 are well at the end of the year, 2 are improved, and 9 remain not improved. At the time of discharge, 25 per cent. were "well"; three months after discharge, only 24 per cent.; but one year after, 49 per cent.

The decidedly improved standing at one year over the relatively poor standing at three months suggests that medical supervision and the measures adopted to improve unfavorable home conditions are producing, if slowly, desirable results.

Ignorance may be bliss, but it certainly is not efficiency. We must face the situation. The Boston Dispensary already knew that conditions unfavorable to health existed in the majority of the homes of its patients. An organized systematized plan for remedying these conditions and medically supervising the patient after discharge was carried out. We know that home conditions were immeasurably improved. We know that as the result of following up the patients, intercurrent diseases were seen by the physician early and that unfavorable convalescences were given medical attention. We have tabulated our results. If these results in spite of our efforts are not as satisfactory as we might wish, we hesitate to hazard a conjecture as to what the results would have been had no effort been made to safeguard the health after discharge from the hospital. Knowing the facts, knowing the difficulties, knowing where we have fallen down, are the first steps toward formulating effective measures to combat these difficulties and secure better results.

More study and a more accurate knowledge of the deleterious influence of environment on the convalescence, in predisposing to intercurrent disease, in preventing normal development and health are extremely

desirable. How can we more readily secure this information and measure the results of our methods of remedying conditions unfavorable to health than by a follow-up system which includes the investigation of home conditions, the medical-social education of parents and medical supervision and periodic inspection? To be of real value, this system must apply to all cases, not to occasional or selected cases; it must be a continuous part of the hospital routine; and, finally it must not be merely a negative factor, finding out the patient's condition at periodical intervals after discharge, but a positive factor, exercising control over conditions. The cost of such a follow-up system adds only one tenth to our hospital budget.

Prevention is cheaper than cure. If we can by means of a follow-up system determine and measure our problems and secure results, this cost should be turned into actual saving to the hospital by decreasing the number of readmissions.

Does not our knowledge of preventive medicine and such clinical experience and statistical evidence as this study discloses indicate that a follow-up system to show problems and secure and determine results is an essential part of the equipment required to produce and measure hospital efficiency in its twentieth century interpretation?

THE EXPERIMENTAL TRANSPLANTATION OF THE EPIPHYSIS

WITH OBSERVATIONS ON THE LONGITUDINAL GROWTH OF BONE *

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No subject in bone surgery has been so extensively investigated during the last few years as has that concerning the transplantation of bone. As a consequence of these studies certain of the resulting changes that take place after transplantation have been solved, but there is still lacking a uniform agreement relative to some of these processes. From the clinical standpoint, however, there is a universal acceptance as to the successful applications of bone transplantations. Thus for the filling in of a bone defect, for the curing of a pseudo-arthrosis, for the producing of an ankylosis of the spine or the joint, and for the correcting of a nasal and other deformity, the transplantation of bone serves a very definite purpose. In all of these conditions a piece of diaphyseal bone with its periosteum is selected for the transplantation material.

From a practical standpoint it is not absolutely imperative that a transplant remain entirely alive and its cells be capable of proliferation, although if it possess these properties it is more likely to be successful. If it be demanded, in addition to the mere passive function of filling in a defect or acting as a framework for the ingrowth of neighboring bone, that the transplant must also possess the active property of increasing in length, within itself, then it is absolutely essential that its cells remain alive and be capable of dividing and extending in a linear direction.

As the longitudinal growth of bone is due to proliferation of the tissue at and adjoining the epiphyseal cartilage, it is necessary to include that part of bone in a transplant when an increase in length is desired. It is not alone sufficient that the cells of the part remain alive after transplantation, but they must retain their ability to multiply in such a manner as to further increase the length growth. In such a case there is an additional requirement of the transplanted tissue besides the mere supporting property of diaphyseal bone. This additional requirement demands that the tissue retain the active function and inherent property of the normal epiphysis to increase the length of bone. The epiphysis is to be considered as a highly specialized tissue which will undoubtedly respond to the general laws of regeneration and transplantation, in that the more highly differentiated the tissue and the more dependent on its blood, vascular, lymphatic and trophic nerve supply it be, the less likely is the possibility of the successful transplantation of that particular tissue. On the independency of the epiphysis to withstand these losses depends its functional transplantability.

It is surprising that this interesting and complex subject has not been more extensively investigated. Aside from the scientific problems connected with such a study there are offered numerous opportunities for clinical applications of a successful method. Instances of such possibilities are found in cases of destruction of the epiphysis following tuberculosis and acute infection of the bones in early childhood; in certain neoplasms necessitating the removal of the epiphysis, in congenital shortening of the limbs, in defective growth after infantile paralysis, in destructive traumatic injuries of the epiphysis, in rachitis, and in congenital dislocations of the hip. Since the reports of transplantation of joints by Lexer, Kuttner and others, it would be very important to know the behavior of the epiphysis after transplantation before attempting such procedures on growing individuals.

From the optimistic conclusions of Rehn and Wakabajashi[1] in 1912, one would be entirely justified in attempting to perform the transplantation of the epiphysis in order to correct any of the above-mentioned conditions when there was loss of the function or the destruction of the epiphysis. These investigators performed homoplastic transplantations on two months old rabbits of the same brood, using the upper end of the radius including the epiphyseal cartilage. They concluded from their experiments that the epiphyseal cartilage after homoplastic transplantations retains its full life properties, showing no evidence of degeneration, and from the very first took over the function of its resected predecessor. These conclusions cannot be accepted without comment, as they were drawn from experiments in which the proximal part of the radius was transplanted, the epiphysis of which shares only a small part in the production of the length growth and therefore a failure of its functions would not be very noticeable when compared with the marked activity of the distal epiphysis. They have relied entirely on a comparison of the roentgenograms of the two feet which were only taken at the conclusion of the experiment in order to determine the variation in growth. As the place of union was evident in

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1. Rehn, E., and Wakabajashi: Die homoplastische Transplantation des Intermediärknorpels im Thierexperiment, Arch. f. klin. Chir., 1912, xcvii, 1.

their expermients they could have easily determined, by means of measuring at the time of the operation and at conclusion of the experiments, whether or not the transplanted piece actually increased in length.

In the same year appeared Axhausen's[2] experimental work in which he performed homotransplantations in young rabbits. He used the lower end of the femur, thin sheets of epiphyseal cartilage, and patella, for his transplantation material and transplanted them under the skin. He found that the greater part of the epiphysis died and that only that part remained alive which was situated beneath the perichondrium. In the middle part of the epiphysis he noticed degenerated areas, and he claimed that ossification took place only in the cartilage that remained alive. In these experiments there was lacking functional stimulation, and for that reason the results are open to criticism.

The results of Axhausen's work were diametrically opposite to Rehn and Wakabajashi. On the other hand, they agreed to a certain extent, with those of Enderlen[3] and Helferich.[4] The latter investigators, who were the pioneer workers on this particular subject, performed experiments of epiphyseal transplantations as early as 1899. They reimplanted the epiphysis in rabbits, using the lower epiphyseal cartilage of the ulna with an adjoining piece of the epiphysis and the diaphysis. Helferich, from the macroscopic findings, reported that the epiphyseal cartilage under favorable conditions need not lose its property of producing length growth. A lessening of this property might be observed but there was not an entire loss. Enderlen, who made the microscopic study of these preparations, reported that the reimplanted epiphyseal cartilage retained its vitality to a large extent. In agreement with Axhausen he noticed that the best maintained were those parts near the perichondrium, while those at the center showed evidence of degeneration. There was an increase in width of the epiphyseal cartilage due to an ossification coming from the living cartilage. The ulna was retarded in growth and, on that account, caused a bending of the radius.

Aside from the investigations of Zoppi[5] who found in his autotransplantation of the epiphysis a regular healing in and the formation of new bone, while in his heteroplastic transplantations there resulted a complete failure; and the studies of Galcarzi,[6] who found that there was a calcification of the epiphysis and loss of function in both auto and homotransplantation, there have been no other attempts to solve this problem prior to the beginning of the present work. During the last year several additional articles have appeared and they will be briefly reviewed.

Of these recent articles the first that appeared was by von Tappeiner[7] who performed reimplantations and homotransplantations on dogs six and twelve weeks of age, using the distal half of the metatarsal. In his reimplantations he found that there was no disturbance in length growth even after six months, while in his homotransplantations he noticed a regular increasing shortening which was proportional to the length of time that had elapsed. He emphasized the importance of early function, and states that the younger the animal the less the amount of shortening. From his homotransplantations he concluded that for clinical applications the transplantations of the epiphysis is unsuccessful.

A short time later there appeared an extensive article by Obata[8] who performed on rabbits reimplantations, autotransplantations and homotransplantations of the entire metatarsophalangeal joint with either a part or an entire metatarsal and phalanx. In some experiments the transplants were made from the dead animal either with or without keeping for a time in salt solution. He also repeated the experiments of Rehn and Wakabajashi by transplanting the head of the radius from one animal to another. In his conclusions he stated that there was more or less shortening in all the cases, but that it was most marked in the homotransplantations. A bony union occurred in all the experiments except in homotransplantations, in which condition a pseudo-arthrosis resulted. In homotransplantations of the head of the radius he found only a slight degree of shortening. He does not agree with Rehn and Wakabajashi that this transplanted epiphysis functionated, but ascribes the evening up of growth to more extensive proliferation of the distal epiphysis. In the transplantations from the dead animal he noticed no evidence of growth and found with one exception that a pseudo-arthrosis occurred.

The next article that appeared was by Heller,[9] who carried out reimplantations of the distal epiphysis of the radius and ulna as well as homotransplantations between related and nonrelated rabbits. He also made a few reimplantations and autotransplantations in goats. He reported that the epiphysis did not keep up its normal length growth in any of the forty-five experiments in which the epiphyseal cartilage was transplanted in the form of half joints. The least amount of shortening took place in the reimplantations, while a greater degree occurred in homoplastic transplants, most marked in the nonrelated animals. In homoplastic transplantation he believed there was a complete cessation in function of the epiphysis, and he ascribed all growths to the nonoperated proximal epiphysis. From his experience with goats, because of the more marked degree of shortening, he concludes that the larger the transplant and the greater the size of the animal, the more marked will be the shortening. In concluding, he said that in autotransplantations there was a lively regeneration of the epiphyseal cartilage from the perichondrium and that a not inconsiderable amount of bone apposition could be recognized, but nevertheless the bone growth remained checked and could not be utilized for practical purposes, especially so in cases of homotransplantations. He thinks that the most favorable conditions for the transplantation of the epiphyseal cartilage would be in the form of a thin sheet without adhering bone particles, so that it could come more directly in contact with the nourishing

2. Axhausen, G.: Ueber den histologischen Vorgang bei der Transplantation von Gelenkenden, in besondere über die Transplantationsfähigkeit von Gelenkknorpel und Epiphysenknorpel, Arch. f. klin. Chir., 1912, xcix, 1.
3. Enderlen: Zur Reimplantation des resecirten Intermediärknorpels beim Kaninchen, Deutsch. Ztschr. f. Chir., 1899, li, 574.
4. Helferich: Versuche über die Transplantation des Intermediärknorpels wachsender Röhrenknochen, Deutsch. Ztschr. f. Chir., 1899, li, 564.
5. Zoppi: Quoted by Rehn and Wakabajashi, Note 1.
6. Galcarzi: Quoted by Rehn and Wakabajashi, Note 1.
7. Von Tappeiner, Fr. H.: Studien zur Frage der Transplantations fähigkeit des Epiphysenknorpels und des Gelenkknorpels, Ztschr. f. d. ges. exper. Med., 1913, i, 491.
8. Obata, K.: Ueber Transplantation von Gelenken bei jungen Tieren, mit besonderer Berücksichtigung des Verhaltens des Intermediärknorpels. Beitr. z. path. Anat. u. z. allg. Path., 1914, xlix, 1.
9. Heller: Experimentelle Untersuchungen über die Transplantation des Intermediärknorpels in Form der halbseitigen Gelenktransplantation, Arch. f. klin. Chir., 1914, civ, 843.

fluids of the body. In a postscript he added that in his more recent experiments on two months old animals, in which after autotransplantations of the epiphyseal cartilage in the form of very thin sheets, he found almost a normal growth. The exact details of these experiments are not given, so one cannot conjecture on the cause of the variations from his previous results.

The most recent article is by Minoura[10] on the transplantation of metatarsophalangeal joints of two months old rabbits into the soft tissues. Either the whole or half joint that was either intact or split longitudinally was transplanted into the back, subcutaneous tissue, liver, or abdominal cavity of the same or different animal. In some instances the joint was placed in a Ringer's solution before transplantation or was removed from a dead animal. He observed that the transplanted joints became encapsulated after one or two weeks. The healing always appeared the same whether it was in the abdominal cavity, subcutaneous tissue, liver, or the muscle. The longitudinally split half joints underwent quicker organization than the unsplit and resorption took place more rapidly when the parts were allowed to remain in Ringer's solution. He concluded that autotransplantation was superior to homotransplantation and that the substitution processes were more active, quicker and intense, and that autoregeneration was more significant and continued for a longer period. Not much difference was noticed between transplants from the dead or from the living animal. In no case after transplantation, even in autotransplantation, was there any regular growth of the epiphyseal cartilage (only an irregular proliferation was found in the periphery) and in no case was there a lengthening of the transplanted joint. In comparing these experiments with those in which the transplantations were made into bone defects, it was noticed that the new formation was less evident, the degeneration appeared earlier in the new-formed tissue, and the resorption played a greater rôle, as in these cases the functional requirements of the respective tissue was lacking.

The prevailing opinions of these investigators indicate that the epiphyseal cartilage after transplantation loses more or less of its power to proliferate and thereby to increase the length of bone. In general they found considerable growth in reimplantations, less in autotransplantations, and practically none in homotransplantations. The greater the variations in the species the greater will be the growth disturbances. None of the authors agreed with Rehn and Wakabajashi in that there was no disturbance in growth after homotransplantation of the epiphysis.

All of the seventy-five experiments of this series were performed on dogs, the same animal often being used for two or more observations.

The majority of the animals were from one and a half to four months of age at the time of operation. In some animals the ages were not definitely known. They showed a definite growth after operation, but the metacarpals had not changed in length. This paradoxical condition can be explained by assuming that growth ceases in the metacarpals before it does in the longer bones.

The metacarpal and metatarsals were selected because they possessed but one epiphysis situated at the distal end of the bone and any growth which occurred could only be ascribed to proliferation at that particular epiphyseal cartilage. These bones were also easily measured at the time of operation and any change in length could readily be determined at the conclusion of the experiment. Another advantage in using these particular bones is that the adjoining bones serve as a natural splint.

10. Minoura, M.: Studien über Gelenktransplantation (inkl. Intermediärknorpel) in Weichteile, Frankfurter Ztschr. f. Path., 8, 1914, xv, 397.

METHOD OF OPERATION

All of the operations were performed under general ether anesthesia. The extremity was shaved and painted twice with tincture of iodin and the operation carried out with the usual aseptic technic.

The incision was made on the dorsal surface of the foot and special precautions were taken in order to preserve the normal vascular and nerve supply to that particular region.

In removing the segment to be transplanted special care was exercised so as not to injure the epiphyseal cartilage. In the very young animals a sharp knife was used, while in the older animals a small saw was necessary to sever the bony connections of the transplantation material.

The small transplants were anchored in place by means of an X-shaped silk suture, while the larger pieces were reinforced by an additional suture passed through the cortex of the diaphysis of each fragment. The total length of the operated and adjoining bones, also the removed and implanted segments were carefully measured. The wound was closed in layers and the foot encased in a plaster dressing, which was removed in from fourteen to twenty-one days. The animal was allowed its freedom from the start. Primary healing resulted in all but two cases.

At the conclusion of the experiment a roentgenogram was taken of the corresponding two feet. Then the foot was dissected and measurements made of all the metacarpals of both the operated and the normal foot. One half of a longitudinal section was preserved in Kaiserling's solution and the remaining part placed in Orth's fluid for further study.

It will be possible to give in this paper only the observations of the changes in growth following the various operative procedures.

In the interpretation of the results certain standards of comparison have been adopted in order to determine the various changes. The two inner metacarpals have been found from repeated observation on normal extremities to be of equal length or within 1 mm. of each other. It has also been noticed that the corresponding bones of each foot are practically of the same length. Thus there is a definite standard of comparison by means of which any change in growth may be calculated.

EXPERIMENTS

The following sets of experiments were performed:

1. Reimplantation of an entire metacarpal or metatarsal: In these experiments the entire bone with its articular surfaces and periosteum intact was raised from its position and immediately replaced. Table 1 shows the results.

Conclusion: After reimplantations of entire metacarpals or metatarsals, in growing animals, there is complete cessation of the growing function of the epiphysis.

TABLE 1.—REIMPLANTATION OF AN ENTIRE METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E2	5	52	3.05	3.15	0.1	0.7	
2. E2	5	52	3.15	3.3	0.15	0.7	
3. E3	5	208	6.3	3.2	—0.1	0.4	
4. E3	5	208	6.3	3.2	—0.1	0.4	
5. E4	3.5	113	3.65	3.6	—0.05	2.95	
6. E4	3.5	113	3.65 cut	3.7	0.05	2.75	Incised
7. E5	7	107	5.5	5.2	—0.3	0	
8. E6	4	298	5.6	4.9	—0.6	0	
9. E6	4	298	5.6 cut	4.9	—0.7	0	Incised
10. E13-R	Old	115	Not taken. Growth ceased	Not taken	0	0	Incision; shows degen.
11. E13-L	Old	115	Not taken. Growth ceased; cut	Not taken	0	0	

TABLE 2.—AUTOTRANSPLANTATION OF AN ENTIRE METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E1	5	109	6.9 cut	1.5	—5.4	0	Cut off end
2. E1	5	109	6.9	6.6	—0.3	0	
3. E17	9	36	6.7 cut	6.1	—0.5	0.3	Long incis. at both ends
4. E8	6	91	6.7 right	6.8	0.1	0	
5. E8	6	91	6.7 left	6.4	—0.3	0.2	
6. E10-R	3.5	89	4.8 cut	4.3	—0.5	0	Incision; showed evidence of degeneration
7. E10	3.5	89	4.8	4.3	—0.5	0	

TABLE 3.—REIMPLANTATION OF SPLIT METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Operated Bone Cm.	Remarks
1. E9	?	31	5.7	5.6	—0.1	0	
2. E14-6	4.5	237	5.9	5.8	—0.1	0	Consid. change in marrow
3. E15	6	38	5.8	5.8	0	0	
4. E18-2	6	223	6.05	3.3	—2.8	0	

TABLE 4.—AUTOTRANSPLANTATION OF SPLIT METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E12	Very old	235	?	6.1	—0.2	0	Incised degen.
2. E17-R	6	36	6.7	6.1	—0.6	0.4	Incised end necrotic

TABLE 5.—REIMPLANTATION OF THE EPIPHYSEAL CARTILAGE

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E14-6	4.5	37	5.9	5.7	—0.2	0
2. E23-13	1.5	23	3.9	4.1	0.2	0.4
3. E21-14	?	4	3.6	3.8	0.2	0
4. E33-44	1.5	43	2.7	2.8	0.1	0.7
5. E38-26	4.0	55	4.4	4.2	—0.2	0.1
6 E41-39	5.0	43	4.55	4.5	—0.05	0.5

TABLE 6.—AUTOTRANSPLANTATION OF THE EPIPHYSEAL CARTILAGE

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E9-4	?	86	5.1	5.0	0	0	
2. E10-5	3.5	89	4.8	4.5	—0.3	0.1	
3. E15-7	6.0	38	5.8	5.9	0	0	Piece inserted was 0.75 mm. wider than that removed
4. E23-13-R	1.75	23	4.0	4.2	0.2	0.6	
5. E23-13-L	1.75	23	3.6	3.8	0.2	0.4	
6. E32-39-R	1.75	136	2.5	2.85	0.35	1.4	
7. E32-39-L	1.75	136	2.55	2.9	0.35	1.4	

2. Autotransplantation of an Entire Metacarpal or Metatarsal: An entire bone was transplanted from one foot to another foot of the same animal. Results are given in Table 2.

Conclusion: The transplanted bones not only failed to grow, but showed definite evidence of degeneration and decrease in length.

3. Reimplantation of Split Metacarpal: The reimplanted bone was divided longitudinally and reinserted. Results are given in Table 3.

Conclusion: As these animals had reached the end of their growing period no observations can be made on the disturbances in growth lengthwise. Some of the bones showed definite evidence of absorption and decrease in length.

4. Autotransplantation of Split Metacarpal or Metatarsal: Before transplanting to another foot the bone was split longitudinally. Results are given in Table 4.

Conclusion: In the single observation in this group in which the animal showed evidence of growth in the normal bones there was a definite decrease in size of the transplant, showing that the splitting of the bone had no favoring influence on the viability of the epiphysis.

5. Reimplantation of the Epiphyseal Cartilage: In this series of experiments the epiphyseal cartilage, including a piece of adjoining epiphysis and diaphysis, was excised and immediately reimplanted. Table 5 gives the results.

TABLE 7.—REIMPLANTATION OF VARYING LENGTHS OF THE EPIPHYSEAL END OF THE METACARPAL AND THE METATARSAL BONES

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E5-1	5	107	Total 5.4; resected ½ piece 2.7	5.2	—0.2	0
2. E7	7	155	Total 7.4; resected ⅓ piece 4.4	3.7*	—3.7	0.3
3. E22-12	1.5	22	Total 4; resected ⅔ piece 2.55	3.9	—0.1	0.5
4. E30-38-R.	?	13	Total 2.4; resected ⅓ piece 0.7	2.3	—0.1	0
5. E30-38-L.	?	13	Total 2.4; resected ⅔ piece 1.8	2.5	0.1	0
6. E31-36	1.75	17	Total 2.5; resected ½ piece 1.25	2.5	0	0.1
7. E33-44	1.5	44	Total 2.7; resected ½ piece 1.5	2.7	0	0.7
8. E34-43-L.	1.5	115	Total 2.8; resected ⅓ piece 1.1	3.25	0.45	1.20
9. E34-43-R.	1.5	115	Total 2.8; resected ⅔ piece 2.0	2.95	0.15	1.45
10. E37-40	2	38	Total 3.05; resected ⅔ piece 2.3	3.0	0	0.3
11. E38-26	4	85	Total 4.5; resected ½ piece 2.25	4.2†	—0.3	0
12. E41-39	4.75	44	Total 4.4; resected ⅓ piece 1.8	4.3‡	—0.1	0.5

* Infection. † Bored holes—nonunion at operation. ‡ Nonunion.

TABLE 8.—AUTOTRANSPLANTATION OF VARYING LENGTHS OF EPIPHYSEAL END OF METACARPAL AND METATARSAL BONES

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E19-5	5.0	34	Total 5.6; resected ½ piece 2.5	5.65	0.05	0.6
2. E19-5-R.	5.0	34	Total 5.6; resected ½ piece 2.6	5.6	0	0.6
3. E20-10-L.	1.5	25	Total 3.6; resected ½ piece 1.8	3.6	0	0.5
4. E21-11	1.5	42	Total 3.8; resected ½ piece 1.9	3.7	0	0.6
5. E29-37-R.	2	143	Total 2.6; resected ⅓ piece 0.7	2.75	0.15	1.15
6. E29-37-L.	2	143	Total 2.5; resected ⅓ piece 0.7	2.6	0.1	1.3
7. E35-41-R.	1.75	111	Total 3.0; resected ½ piece 1.55	3.0	0	1.6
8. E35-41-L.	1.75	111	Total 2.95; resected ½ piece 1.5	3.0	0	1.4
9. E36-42-R.	1.75	43	Total 2.8; resected ⅔ piece 2.1	2.9	0.1	0.55
10. E36-42-L.	1.75	43	Total 2.9; resected ⅔ piece 2.1	2.95	0.05	0.6
11. E39-37-L.	5.5	43	Total 4.3; resected ⅓ piece 1.8	4.2	0	0
12. E40-37-R. Homo.	5.5	43	Total 4.1; resected ⅓ piece 1.6	3.9	0	0.15

TABLE 9.—TWO STAGE AUTOTRANSPLANTATION OF DIFFERENT LENGTHS OF THE EPIPHYSEAL END OF THE METACARPAL AND THE METATARSAL BONES

Number	Age Mos.	Duration of Experiment Days	Measurement at First Operation Cm.	Measurement at Second Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E16	9.0	89	Total 6.9; resected ½ piece 3.2	No second operation	6.9	0	0.
2. E20-10	1.5	25	Total 3.5; resected ½ piece 1.9	Not taken; union at first	4.0*	0.5	0.5
3. E21-11	1.5	42	Total 3.7; resected ½ piece 1.9	No second operation	4.3	0.6	0.6
4. E22-12	1.5	22	Total 3.9; resected ⅔ piece 2.85	No second operation	4.0†	0.1	0.4
5. E25-26	2.0	155	Total 4; resected ½ piece 1.9	Total? Resected piece 2	3.6†	—0.4	0.15
6. E26-27	1.5	64	Total 3.1; resected ½ piece 1.5	Total 3.7. Resected piece ?	3.85	0.75	1.6
7. E27-28	1.5	80	Total 2.9; resected ½ piece 1	Not taken	3.3‡	0.4	1.6
8. E28-29	1.5	67	Total 3; resected ⅔ piece 2.3	Total 3.7. Resected piece 3.	3.9	0.9	1.5
9. E37-40	2.0	38	Total 3; resected ½ piece 1	Total 3.25. Resected piece 1.2	3.3	0.3	0.3
10. E39-41	1.75	46	Total 4.4; resected ½ piece 1.6	Total 4.4. Resected piece ?	4.25‡	—0.15	1.1

* Died two days after second operation. Nonunion at second operation. † Nonunion. ‡ Nonunion first.

Conclusion: In none of these experiments was there an increase of more than 2 mm. in length since the operation, while the normal bones showed as much as 7 mm. of growth. A difference of 2 mm. in length is within the limits of error in measurement or lengthening due to failure of close approximation. After reimplantation of the epiphyseal cartilage there is at first a slight increase in length while at a later period there is a decrease in length.

6. Autotransplantation of the Epiphyseal Cartilage: In these experiments the resected epiphyseal cartilage was interchanged with a corresponding piece from a bone of the other foot. Results are noted in Table 6.

Conclusion: With the exception of two experiments there was no definite evidence of increase in size after autotransplantation of the epiphyseal cartilage. In these two positive results the increase in size was very limited, being only 0.35 cm. as compared with 1.4 cm. of normal growth. On section of the bones the epiphysis of the operated bones showed definite signs of degeneration, while the epiphysis of the nonoperated bones presented a normal appearance. After autotransplantation of the epiphyseal cartilage its function to increase in a linear direction is entirely lost or only persists in a very limited degree.

7. Reimplantation of Varying Lengths of the Epiphyseal End of the Metacarpal and Metatarsal Bones: In this series of experiments one third, one half and two thirds of the epiphyseal end of the metacarpal was removed entirely from its normal bed and reinserted immediately in the same position. Results are noted in Table 7.

Conclusion: In none of these cases with the one exception of Experiment 8 E 34-43 L, was there any evidence of increase in length growth. The exact reason for the increase in this experiment cannot be definitely determined. It is possible that for some special reason this particular epiphysis proliferated for a short time. In the gross specimen there is no evidence of epiphyseal cartilage, so what growth occurred took place early and only for a limited time. In view of the large number of negative results this experiment cannot be definitely considered as indicating an active functioning of the transplanted epiphysis. Whether a long or short piece of bone was transplanted with the epiphysis was of no consequence as there was practically complete failure of the growth in every case. Incisions or boring of holes into the bone seem to hasten the degenerative processes.

8. Autotransplantation of Varying Lengths of the Epiphyseal End of the Metacarpal or Metatarsal: These experiments differ from those of the previous group (7) in that the segment of bone was interchanged with a corresponding segment from the opposite foot. Results are noted in Table 8.

Conclusion: There is a uniform failure of growth after autotransplantation of varying lengths of the epiphyseal end of the bones. The normal bones show a marked increase in length. Boring holes into transplants increases the degenerative processes.

9. Two Stage Autotransplantation of Different Lengths of the Epiphyseal End of the Metacarpal or Metatarsal: In this set of experiments the distal one-third, one-half or two-thirds was united to the proximal two-thirds, one-half or one-third respectively of the adjoining metacarpal or metatarsal. After a sufficient length of time for union had elapsed a second operation was performed in which the distal segment was entirely separated from its surrounding tissues, thereby completing the autotransplantation. Results are shown in Table 9.

Conclusion: In this set of experiments there was evidence of almost normal growth up to the time of the second operation, but after severing the epiphyseal end from its surrounding tissue there was a marked diminution in growth. This shortening took place even when there was firm union with the normal proximal segment. It was noticed that in cases where nonunion occurred that there was more marked disturbances in growth — even in the first part of the experiment. Under these very favorable conditions for transplantation there was considerable diminution of the function of the epiphysis after transplantation.

GENERAL CONCLUSIONS

1. From the practically uniform failure of increase in length of the bones after transplantation of the epiphyseal cartilage, either alone or with an accompanying piece of the epiphysis and diaphysis, both in reimplantation and autotransplantation, it must be concluded that epiphyseal cartilage loses its power to functionate after such transplantations.

2. As the degenerative processes were more advanced in autotransplantation than in reimplantation, it can be almost certainly predicted that there would be a more marked degeneration in homotransplantation.

3. Whether a small or large sized transplant was taken was of no consequence, as there was the same failure of growth in every instance. Incisions into the periosteum or boring holes into the cortex hastened the degenerative processes.

4. There was marked disturbance of growth following the two-stage autotransplantation, in spite of the fact that osseous union was secured before severing the epiphyseal transplant from its surrounding and nourishing tissues.

5. The epiphyseal cartilage must be considered as a very vulnerable tissue, its viability being directly dependent upon its blood supply.

Shreve Building.

ABSTRACT OF DISCUSSION

Dr. D. B. Phemister, Chicago: The finding of Dr. Haas that there is apparently no longitudinal growth through the epiphyseal cartilage after transplantation is very interesting. One would expect cartilage to live if any tissue lives when transplanted, because it is nourished by a lymphatic instead of a blood vascular circulation. Hyaline articular cartilage covering the ends of bones is frequently detached with or without a portion of underlying bone and becomes a loose body in the joint. The bone cells, if any are present, always die and are absorbed, but the cartilage, receiving sufficient nutrition from the synovial fluid, remains alive indefinitely. The deeper cells which have a columnar arrangement slowly undergo necrosis. I have studied histologically ten or twelve such specimens of the various ages and have noted transformation of the superficial cartilage into fibrinous connective tissue in the older specimens. In one specimen that had been free in the joint for ten years there was proliferation of the cartilage and a connective tissue capsule had formed. The injury of the transplant resulting in disturbance of longitudinal growth might be either to the epiphyseal line or to the juxta-epiphyseal bone. The small amount of longitudinal growth occurring in some of his experiments might possibly be accounted for by longitudinal growth in the shaft itself. We see the shaft of a bone increase one-half an inch or more in length as a result of an inflammatory process, as syphilis or in osteitis deformans, where the epiphyseal lines are closed. Consequently, there

is no reason why in the absence of the normal process of longitudinal growth, and where there is a great demand for it, the cells of the shaft should not proliferate and increase the length of the bone.

DR. J. T. RUGH, Philadelphia: I think the important lesson for us as practical orthopedic surgeons is the postponement of our operative work in this type of cases until adult life or until the expectation of any natural increase in growth is past. I know in my own experience I have been sorely tempted at times to replace a very imperfect hip joint, in the case of congenital dislocation, or similar condition, with the head of the fibula, but have thus far refrained, and I shall continue to do so in the future. The lesson I have learned from this experimental work of Dr. Haas has been of enormous importance.

DR. ROLAND MEISENBACH, Buffalo: The work of Dr. Haas, in my opinion, is of great value. Although he has gotten some negative results, I think it touches on many things of value which will in the future give us a better understanding of one of the most important parts of the long bone; namely, the epiphysis. It may also assist in giving us a better understanding of the function of the epiphysis. I am particularly interested in this work because several years ago I did some research work on the chemical and mechanical stimulation of the epiphysis. In this work, I had occasion to observe the epiphysis both microscopically and macroscopically in about two hundred rabbits. In studying the epiphyseal and diaphyseal lines, it was interesting to see from the experimental work the close relation to the practical work; that is, the cases which we see daily that have interference of growth or which have stimulation of growth of the epiphysis. This work is really the fundamental source of all fracture and bone-graft work. I would like to ask Dr. Haas whether the transplant is divided from above or below the diaphyseal line. This will, I believe, change the results of the experiments materially. In my experiments I was able to stimulate and retard bone growth, depending on which part of the epiphyseal cartilage was attacked in the experiment. I have a few lantern slides which I prepared for the Pan-American Congress which show sections of the epiphysis and epiphyseal line in different stages of stimulation. That is, that by either toxic or mechanical means it is possible to cause more bone to form in the region of the epiphyseal end of long bones, as in my experiments with tibias, or to almost cause an arrest of growth. One slide shows that by means of toxic agents it has been possible to cause the entire epiphyseal line to close at a much earlier period by months than normally. This explains, I believe, many of the cases which have focal infection at some part of the body that later on developed joint lesions, and in which the joints became deformed; also it explains the arrest of growth following fractures, and therefore I think that an attempt to transplant the epiphysis depends largely on the point from which we take the transplant and the technic employed.

DR. S. L. HAAS, San Francisco: As Dr. Phemister has mentioned, cartilage is a very resistant tissue. It is able to withstand a considerable amount of injury and is dependent on the surrounding tissues and fluids for its nourishment. I have only studied a few microscopic preparations from these experiments and have found that the cartilage near the perichondrium remained alive. It is possible that some of this cartilage may continue to proliferate, but I doubt if it would cause any decided increase in the length of the bone. There is a distinction between growth in length and increase in size. It was noticed in some of these experiments that there was a marked swelling about the epiphyseal cartilage without any increase in length, showing that although there was cell growth there was no purposeful longitudinal increase like the normal epiphyseal cartilage. It was merely the regular cell division and multiplication which manifested itself by spreading in the line of least resistance. It was shown in the old experiments of Hunter and Duhamel that the longitudinal growth of bone takes place only at the epiphyseal ends. In these experiments two pegs were driven into the diaphysis and in spite of an increase in length of the bone there was no change in the distance between the two pegs. As to the increase in length following destructive osteomyelitis, it might be due to the general wild multiplication during the processes of regeneration, which, being unrestricted, spread in all directions.

In regard to Dr. Meisenbach's question as to whether the transplantation was made above or below the epiphyseal line, I presume he wishes to ascertain the relation of the incisions to the metaphysis, which is the most actively growing part of the bone. In all the excisions of the epiphyseal cartilage a piece of adjoining epiphyseal and diaphyseal bone was removed so as not to injure that particular region. Heller, in a postscript to his article, stated that he had succeeded in transplanting the epiphyseal cartilage in the form of very thin sheets of cartilage and that there resulted almost a normal growth. He does not give the exact details of his experiments, but from the results of my experiments I am forced to entertain some doubt as to the correctness of his conclusions. It is possible that by some special method he is able to get these good results.

THE RELATION OF THE ROENTGENOLOGIST TO THE HOSPITAL*

H. W. VAN ALLEN, M.D.
SPRINGFIELD, MASS.

The reason for presenting a paper dealing with the relation of the roentgenologist and the hospital comes from the very great variation of such relation at present. Were any one of the methods now in vogue approaching idealism, it would be shown by the number adopting such a method; while a study seems to show greater variation as time goes on. My attention was first called to this subject by the investigation made by a state committee in regard to patients coming to hospitals under the Massachusetts workmen's compensation act. This investigation showed no two institutions in the entire commonwealth making arrangements that could by any means be called similar. In medicine a multiplicity of drugs recommended for a particular disease shows a competency of none, and so it is fair to suppose the roentgenologist and the hospitals have not yet found a satisfactory arrangement one with the other.

The growth of the applications of the Roentgen ray is responsible for this condition. When first given to the medical profession, it promised to be one of the most limited specialties. The locating of dense foreign bodies and fractures of the bones of the extremities was its entire field. Now I say without hesitation there is no broader specialty in medicine. I cannot think of a single branch of the profession which does not call the Roentgen ray to its aid at times. Any medical journal is proof of the wide scope of this specialty, and more than half the articles show the dependence placed on the ray, either in diagnosis or in treatment.

The original roentgenologist was usually a photographer, electrician or a young and budding physician, hoping to use this as a stepping-stone to something more tangible. It was the way this original work was done that to a certain extent is the fault of the present condition. Many hospital superintendents and not a few physicians have failed to keep pace with the Roentgen progress and know the kind

* Read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

of man now required. A competent roentgenologist must have primarily a good knowledge of medicine in its various branches; he must be well versed in general science, with special information in regard to electricity, and, furthermore, he must have a working knowledge of photography. All these requirements being fulfilled, he must have the ability to acquire special acumen in interpretation of the shadow shown on Roentgen-ray plates. This mental coordination of the shadows and placing the right significance on each is almost an instinct, and if one fails in this, all other qualities cannot make one a real roentgenologist. Thus the roentgenologist must have combined medical, electric and photographic information to succeed.

Many serious operations rest entirely on the Roentgen-ray findings. Why have less than the best skill in determining these findings? When the people come to know that their hospital treatment often rests on the Roentgen evidence found at entrance, they will select a hospital where this work can be best done. They should know that the expense of maintaining the rapidly improving Roentgen-ray apparatus is great, and proper fees must be arranged. A price per plate is the poorest way to estimate the cost, as the plate is the smallest item of expense. Hospital managers should trust their roentgenologist to carry on the entire department, including the financial policy, or take time to make a more thorough and comprehensive study than many are doing at present.

In writing this paper, I have had in mind more particularly the hospitals of 150 beds or less. A paper written recently by Dr. I. S. Hirsch[1] of New York has dealt admirably with the requirements of a large metropolitan hospital. Many of the requirements of such a hospital do not, however, apply in the one with the number of beds just referred to. In such hospitals it is not practicable to maintain a Roentgen staff, but one man with an assistant or two can make a creditable reputation for himself and the institution.

The cost of equipping and maintaining the Roentgen-ray department of hospitals is constantly under discussion. The rapid evolution of the Roentgen-ray machine has made changes necessary so often that up to the present time the money for instruments must come from other sources than the daily revenue of the department. When such a time comes that no radically new type of instrument is required, this expense will immediately be materially lessened. The cost of maintenance, however, except where the free bed system or outpatient department is very large, should be derived from the patients themselves.

This brings us to the question of private patients' fees. I maintain that they should be the same as in the roentgenologist's private laboratory; otherwise he would be a competitor with himself. The division of this fee between the roentgenologist and the hospital will vary, of course. The greater the skill of the roentgenologist, the larger his proportion. It should always be kept in mind that it is the perfection in technic and skill in plate reading that is required, rather than the sale of so many plates made on an instrument costing so much. Ordinarily, hospitals should not retain more than 25 per cent. of the fee charged private patients to cover the overhead expenses. Under few circumstances should the roentgenologist (who, I have said, should be a physician) sell his services at a fixed sum per year to a hospital. It opens opportunities for practices which are not elevating professionally, and are a source of constant friction.

The relation of the roentgenologist to the hospital staff is another question often discussed. If he is a real roentgenologist, his place on the staff should be the same as that of any physician doing special work. This place has not always been conceded him, owing in part to the confusion in the early days as to who should be a roentgenologist.

His report should also be in the nature of a consultation rather than that of a laboratory report. This report may be written, but I believe should be supplemented when possible by a verbal one, going into the various possibilities that may be recognized only by the roentgenologist in consultation with the clinician. It is only in this way that the patient can get the full benefit of our professional skill. The method of stated staff consultation is in vogue in Germany, and much of the diagnostic acumen of the Germans is due to this close relation into which the members of the staff are thrown.

The necessity of the preservation of the finished plate is not recognized sufficiently by the vast majority of hospitals. Too many times every one has access to them, and plates may be removed to be replaced at will or even not at all. These plates are an accurate record of the condition of a patient at a given time, and in many cases cannot be duplicated. A plate which, when taken, seems of ordinary moment may later become of the greatest value, either in treatment or medicolegally. All should be preserved. No one but the roentgenologist or his assistant should have the right of access to the files, and if for any reason plates are removed, they should be signed for and a record blank deposited in the place of the plate, showing who has taken it; and when it is returned, credit should be given for its return.

The plate legally belongs to the hospital or the roentgenologist, and never to the patient. He is entitled only to the information obtained from it, and given through his physician.

A medicolegal aspect too little recognized is that the roentgenologist must identify the plate himself in court. A medical man who simply borrows the plate to appear in court has evidence of no value. He cannot under oath connect it in any way with the patient. He did not see it developed, he has no mark on it which shows there was not an exchange made in the dark room, and moreover, he is not an expert in plate interpretation. The roentgenologist should have full control of the plate library, demonstrating the plates when required.

The method of preserving these plates hardly comes within the scope of this paper. It will vary with the size and requirements, as teaching, etc. It is a duty to the hospital, owed by the roentgenologist, to see that these plates are well preserved.

My plea in this paper has been for a closer relation medically of the roentgenologist to the hospital, and for a recognition of his ability. On his part, it is a duty to use his general medical acumen as well as his technical Roentgen information. Also there is a necessity for his being in entire charge of the department, which should be well correlated in all its branches.

19 Maple Street.

1. Hirsch, I. S.: Mod. Hosp., January, 1915, p. 11.

ABSTRACT OF DISCUSSION

DR. A. R. WARNER, Cleveland: The Roentgen-ray department has become an important specialty of hospitals and it has gone beyond the stage of a novelty. It is an essential. The principle brought out as to diagnosis and the handling of diagnoses and information in regard to patients as expressed in the paper I am quite sure is correct. We have had some trouble with this matter on several occasions in Ohio and each time the courts have held as the paper expressed.

DR. JOSEPH M. SPELLISSY, Philadelphia: Dr. Van Allen mentioned the possession of the plates. I think we all agree that the plate should belong to the hospital. Where a great many plates are made the storage and preservation of the plates has become a bugbear in a large institution doing a large amount of work, so that plates are destroyed within a year. I know at the University Hospital, Philadelphia, with which I am closely associated, they have a department of photographic records there in which I am interested in standardizing photographic records and also Roentgen-ray plates. I have made Roentgen plates myself. I presented this morning a Roentgen-ray tracing such as we use in St. Joseph's Hospital. The paper is either "onion skin" or what is called buff manifold paper. It is transparent. It has printed on it the date of taking the plate and then the roentgenologist makes a tracing of the plate on the paper and that paper is bound with the records of the patient, so that if the plate is destroyed it still remains of value to the physician or surgeon.

MR. F. M. NESMITH, Oakland, Calif.: I would like to ask Dr. Spellissy if that record is accepted in court?

DR. SPELLISSY: I do not know. It has been mentioned that a roentgenologist sometimes goes to court. The testimony I should think would be acceptable that that was his tracing of what he saw in the plate. Where a plate is produced itself I have known the most eminent roentgenologists to disagree in the interpretation, and they would throw out the testimony.

DR. W. H. WALSH, Philadelphia: I do not believe that the roentgenologist of a hospital should be permitted to have anything to do with the financial policy of the Roentgen-ray department, this question being one entirely within the province of the management of the institution. There should be no question as to the desirability of consulting the roentgenologist in all questions regarding the equipment of his department, but when questions of cost are involved they must be finally decided by the administrator. I can see no more reason in permitting the roentgenologist or the pathologist to handle the financial policies of their respective departments than I do in allowing the visiting physicians or surgeons of the staff to meddle in the financial matters.

With respect to the question of the division of fees between the roentgenologist and the hospital, I must express my disapproval of such an arrangement, as I do not think they work out to the ultimate benefit of either of the principals. There is no good and sufficient reason why the roentgenologist or members of the staff should not be the recipients of salaries for their work, a procedure which in no way affects the dignity of their position, nor which could prejudice their professional standing. Being opposed to the very proposition of dividing fees, *any* division would be objectionable to me; but I am rather inclined to think that the hospital that only retains 25 per cent. of the fees received, supplying as it does the apparatus, supplies, electrical current and assistants, is not getting its due, and I should feel inclined to reverse the arrangement, allowing the roentgenologist 25 per cent. and the hospital 75 per cent., a more equitable division.

DR. H. W. VAN ALLEN, Springfield, Mass.: In Massachusetts, at least, tracings of plates are not admitted as evidence in court. The actual plate is the only exhibit allowed. Tracings may accompany the plates in an explanatory way, as they are much more easily understood by the jury. If a plate has been lost or destroyed the roentgenologist may state his best memory of the plate, but cannot introduce a diagram.

Of course I do not have as large a Roentgen clinic as Dr. Spellissy of Philadelphia, but in proportion our space is as valuable. We, however, keep our plates easily accessible until one year old and then they are taken to space less valuable in the hospital and permanently stored. This is a necessity, as frequently they are required for reference to note changes in chronic cases, as well as for teaching and for court cases; the latter not required at times for several years after the plate is made. One recently was required after an interval of seven years.

In regard to the financial part, I believe it should be under the roentgenologist's control. It is so in the hospitals I am connected with, and the plan works nicely. Superintendents do not know the requirements of such a rapidly changing specialty, and I have found they appreciate careful financing, which can only be done by one familiar with the work. As to the 25 per cent. taken out for expenses by the hospital on private patient's fees, careful study of the subject makes me think this is about correct. It may vary in some hospitals slightly. This percentage (at rates charged in private laboratories) will cover actual expenses on private patients and it is self evident that the remainder is paid for the skill of the operator, and any of this going to the hospital would be as deplorable as fee-splitting is between doctors.

MANUFACTURE AND ADMINISTRATION OF NITROUS OXID FOR ANESTHESIA

THE EXPERIENCE OF LAKESIDE HOSPITAL *

A. R. WARNER, M.D.
CLEVELAND

At Lakeside Hospital, nitrous oxid gas has been used for anesthesia extensively for about eight years, and has been manufactured as a routine in the hospital for more than six years.

For the first four of these years, the gas we manufactured was not entirely satisfactory to any one, and at times was not without harmful effects. This was overlooked at first, partly because, on the whole, we had as good results as others, and partly because it was then believed that a certain amount of cyanosis was necessarily present during nitrous oxid-oxygen anesthesia, and that bad after-effects were in a measure to be expected. As our anesthetists developed more skill with this anesthetic, they were able to demonstrate to us that the cyanosis, the irritation, and the symptoms of toxemia following the anesthesia were present to a greater or less extent in all or in several patients on the same day, and that on other days there were no such symptoms at all: they convinced us that the gas made in the hospital contained a variable amount of some poison. Commercial gas, although producing at times the same symptoms of toxicity, seemed more uniform and distinctly less irritating. This difference was fairly constant, although our plant and methods of manufacture were the same as the commercial plants and methods known to us. On our worst day one patient of the gynecologic service died with all the symptoms of a severe toxemia a few hours after a simple operation; one patient of the surgical service was severely poisoned, and three others suffered to a lesser extent. The predominating symptom of the poisoning was a cyanosis that no amount of oxygen could dispel. The hemoglobin was evidently

* Read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

damaged, and our surgeons learned that outdoor fresh air treatment was the most effective treatment. The condition, with the exception of the color, resembled carbon monoxid poisoning, yet unfortunately no spectroscopic examinations of the blood of these patients were made.

About two years ago, it became evident to all that nitrous oxid must be obtained in greater purity, or its use in the hospital abandoned. On the good days this anesthesia was so satisfactory to the surgeons, so unobjectionable to the patient, and made the operative cases so easy to care for in the ward, that it seemed ideal for hospital use. In our opinion these facts justified every effort to make it right. The best consulting chemists obtainable were called to examine the plant and methods. Each pointed out possible defects, and all agreed that better apparatus and methods could probably be developed by experiment. Each called attention to the great number of the possible impurities. One of our trustees, Mr. H. M. Hanna, then offered to provide the funds necessary to run an experimental plant at the hospital, and I undertook to solve in such a plant the two following problems:

1. To find a method for the manufacture of nitrous oxid of sufficient purity to be without poisonous effect.

2. To devise apparatus by which this can be done as a routine in hospitals under hospital conditions.

The details of many experiments with new chemical processes and types of apparatus need not be presented. The entire plant was rebuilt several times. The net result of the first six months' work was only more uniform gas: we did not have the very bad days, yet the evidences of toxicity continued. About this time we found that nitric oxid, even when present in large amounts, was entirely removed from the nitrous oxid by confining in iron tanks or over water for a few hours. This explained the lesser irritation from commercial gas, which stands longer in the gasometers and is always shipped in iron cylinders. Commercial gas has always been free from nitric oxid, and our gas — sometimes used without standing long in the tanks — had not been. In these experiments we became convinced that the poisonous effects were, at times at least, not from the nitric oxid, which has been the generally dreaded impurity. We learned, too, that the effect of the poison was cumulative, and that a long anesthesia was the most delicate available test. In comparison with this, all analyses and chemical tests were crude.

The impurities theoretically possible to produce in the destructive distillation of even a pure ammonium nitrate in an iron or other reducing retort are many. Among these are many of the more highly organized, well-known, hemoglobin poisons, as the hydrazins and hydroxylamins. It was at least possible that some of these were causing the trouble. Our gas and the best samples of commercial gas obtainable were tested, and all were found slightly alkaline to phenolphthalein. Published analysis of commercial nitrous oxid made by reliable chemists had reported the presence of traces of ammonium compounds and other nitrogenous substances which certified to the presence of ammonia or of substances breaking down to ammonia. To test the hypothesis that these basic compounds might be the poison, a thorough washing with strong sulphuric acid was then added to the process of purification of the gas, for the purpose of removing all free basic radicals. On this day — now over a year ago — our gas became absolutely neutral in reaction, and the peculiar cyanosis and all other symptoms of toxicity disappeared from our operating rooms, never to appear again when acid-washed gas was used. We did, however, see it in varying degrees each time that the installation of new apparatus in the plant made it necessary to shut down and use for a few days commercial gas not scrubbed with acid. All of our days are good days now: we are enjoying the advantages of this anesthetic without the disadvantages which had been so constant as to become regarded as necessary and belonging to it.

Confirming evidence came from independent sources. The Ohio Chemical Company of Cleveland noted our better results, and remodeled their plant. Three competent anesthetists, whom I have happened to meet, one from Boston, one from New York and one from Ithaca, volunteered information regarding the uniformly better results which they were having with the Ohio gas, all dating the better results from the date the company remodeled its plant and instituted the acid wash as a part of the purification process. Later the Lennox Chemical Company remodeled its plant to include the acid wash. Since this date I have not heard of any evidence of toxicity or any bad results from the use of nitrous oxid in Cleveland or vicinity. These two plants manufacture all the gas sold in or about Cleveland.

The chemical work to identify the particular poison or poisons which have caused all the troubles has not been done. We know only that it is removed by the acid wash, and that it is found in the acid in the form of ammonium salts, which is consistent with the belief that it is one of the hydrazins or hydroxylamins. The problem of isolating the particular poisons by chemical means is too difficult to look attractive, now that the practical results have been attained without such work.

For the simple purpose of preventing commercial monopoly, applications for patents on a new method of separating the nitric oxid from the nitrous oxid, on a new wash jar devised, and on a process of removing the bulk of the impurities by condensing the 45 per cent. of water in the crude gas, as well as on the process of removing traces of alkaline substances, have been made. All patents issued will be held by the hospital to guarantee the unrestricted use of the apparatus and the methods covered by them.

To our mind the first problem has been solved. Nitrous oxid can be manufactured in sufficient purity to be absolutely safe for use in anesthesia. We are not yet quite sure about the second problem. Lakeside can now manufacture such gas as a routine, and safely, but the walls and ceiling of our room still bear marks made by pieces of bursted retorts, and our employees have not forgotten the fumes which repeatedly filled the corridors "from the gas plant." It is never entirely safe to place a pot containing a nitrogenous and an oxidizing substance over a fire. Many defects in the models of apparatus and troubles in the handling of the purification process have been overcome, some nonessentials have been eliminated, and safety devices have been added, so that it now seems to us entirely reasonable to expect a good chief engineer to supervise a similar plant and train a helper to run it; yet it remains to be demonstrated.

The cost of building a new plant for the manufacture, purification and handling of nitrous oxid similar to the one now in use at Lakeside would be about $2,700, and it would require about 600 square feet of

floor space. This figure includes the cost of apparatus for liquefying the nitrous oxid and for filling small cylinders. The cost of apparatus for the handling of oxygen (purchased in large cylinders) outside the operating room, and for delivering it in pipes parallel with the nitrous oxid at the same constant pressure is about $300. This includes apparatus for filling small cylinders from the large. The cost of running the pipes for the nitrous oxid and oxygen to the operating rooms would be additional, and would vary with distance and difficulties. It would be the same as the cost of running water pipes the same distance.

COST

From the first there has been a gradual reduction in the cost of nitrous oxid-oxygen anesthesia. Three years ago our costs were running about $10 per hour, divided into $3 for anesthetists' salaries and $7 for the gases and incidentals. The present figures are $2.50 for anesthetists and $1.57 for gases and incidentals, making a total of $4.07. In order to present the details of cost as clearly as possible, I have prepared two series of the detail of six consecutive months, each with averages. The first series ends with March, 1914, and the second with April, 1915. Dur-

TABLE 1.—AMOUNT OF GASES USED, FIRST SERIES

	No. Gallons N₂O from Plant	Cost of N₂O from Plant	Cost of N₂O per 100 Gallons	Total Gallons N₂O Used	Av. No. Gal. N₂O Used per Hour	Av. No. Gal. O₂ Used per Hour	No. Hours of Anesthesia	Cost per Hour for Anesthesia
Oct., 1913....	54,346	$220.02	$0.59	69,646*	470	170	148	$6.18
Nov., 1913....	44,601	262.30	.59	61,401*	404	170	172:10	6.62
Dec., 1913....	43,296	306.95	.70	44,596*	288	139	112:6	6.76
Jan., 1914....	61,176	328.08	.53	62,376*	243	43	256	3.05
Feb., 1914....	35,478	243.60	.68	36,178*	202	88	138:44	4.80
Mar., 1914....	52,152	256.33	.56	59,652*	326	56	182:50	4.38
Average....	48,508	$292.88	$0.61	55,642	361	111	161:42	$5.50

* Small cylinders purchased in this period.

ing the first series we purchased the small cylinders used, so that the amount of gas manufactured was not the total amount used. In the second period we compressed our own nitrous oxid for small cylinders, and filled small oxygen cylinders direct from the large. The filling of the small oxygen cylinders from the large is distinctly a saving. In Cleveland, the price of oxygen in small cylinders is just seven and one half times as much per unit volume as in large cylinders. This is due to the fact that the large cylinders, at least, are oxygen from the Linde process, which is apparently of perfectly satisfactory quality. The small cylinders are either refilled or oxygen from the old process. The figures for the amounts of the gases used are from the storage tanks in the basement, and therefore account for all leaks, accidents and wasted gas. To determine the amount of gas used per hour, the total amount drawn from these tanks was divided by the total number of hours of anesthesia reported in the month. The length of anesthesia reported is the actual time that the gases are flowing.

The most striking figure of these tables is the drop in the amount of nitrous oxid used per hour from 361 to 161 gallons. This and the corresponding drop in the oxygen figures were caused by two factors developed and installed between the two series. The first was the attachment of meters measuring the gas going to each machine so that the anesthetists could note the comparative amount of gas used in any period. Our gas man repeatedly made minute readings during the anesthetics given by our three anesthetists, until we could recognize the anesthetist from a chart of these readings. We demonstrated the fallacies of the rate of flow dials on the machines, and the inaccuracy of the meter readings themselves on account of the variations in the pressure. The result of this work was a clear understanding by the anesthetists of when and how they wasted gas. The wasting became less. Our

TABLE 2.—AMOUNT OF GASES USED, SECOND SERIES

	No. Gallons N₂O Made	Cost of N₂O	Cost per 100 Gal.	Av. No. Gal. N₂O Used per Hour	Av. No. Gal. O₂ Used per Hour	No. Hours of Anesthesia	Cost per Hour for Anesthesia
Nov., 1914.....	27,192	$216.85	$0.79	153	85	177:20	$3.97
Dec., 1914.....	21,002	221.50	.71	172	53	180:17	3.46
Jan., 1915.....	18,424	123.52	.67	153	62	119:26	4.71
Feb., 1915.....	18,582	126.52	.69	166	107	111:39	4.81
Mar., 1915.....	25,982	169.60	.65	158	54	162:44	3.41
Apr., 1915.....	30,071	175.40	.67	162	60	160:43	3.75
Average.....	24,539	$172.68	$0.70	161	70	152:12	$4.02

meters were secured with difficulty and at considerable expense, because the high pressure required special construction. But since then one firm, at least, has put suitable meters for this use on the market, and makes a gas machine with meters as an integral part. The second fact was the lowering of the pressure in the pipes leading to the gas machines from 35 to 5 pounds. This pressure is, or should be, reduced by the machines to practically atmospheric pressure. One of the makes of machines that we use handled the lower pressure equally well, but the other did not until we enlarged the ports. It was soon noted that the lower pressure was much easier for the patient as well as more economical. The anesthetist can turn on all the gas the patient can breathe without develop-

TABLE 3.—DETAIL OF THE COST PER HOUR

	First Series	Second Series
Nitrous oxid	$2.20	$1.12
Oxygen	.25	.16
Anesthetists	2.45	2.30
Incidental items, repairs, etc.	.40	.24
Total	$5.30	$4.02

ing tendency toward positive pressure in the lungs. Expiration can take place against the gas flow, checking it without effort, and there is always a sufficient volume of gas available for rapid inspiration without developing a negative pressure and effort. The gas flows freely in inspiration, but is automatically checked in expiration.

The increase in the cost of manufacture in the second series is due entirely to the lesser amount made and the constant overhead expense for the salary of the man who runs the plant and for other fixed charges. No items of interest or depreciation, but all repairs and replacements are included. In each series, the cost of ammonium nitrate was the same.

The recent sharp rise in the price of the nitrate is caused by the increase in the cost of nitric acid due to the war.

ADVANTAGES

The advantages of this anesthetic which the patient most highly appreciates are the facts that the gases are not disagreeable or irritating, and that consciousness is lost so promptly. To the patient the starting of the anesthetic is the beginning of the operation, and the sooner consciousness is lost, the better for many reasons. Crile has found that it protects the brain cells from shock more than other anesthetics: especially so, if combined with a little morphin. Following the operation, the patient is not called on to endure patiently discomfort from the irritation of ether in the eyes, throat and bronchial tubes, or on the skin. There are some to whom a greater advantage seems to be the fact that they are not likely to talk or act foolish when coming out from the anesthesia.

In the operating room, gas has an advantage over ether anesthesia because the patient gets under its influence more quickly, saving time, and because at the close of the operation the patient is conscious and can be returned to his room as easily as any conscious patient. The familiar scenes of delirium in the second stage of ether, with orderlies holding the struggling patient on the table and the surgeon trying to boss the job and at the same time keep sterile, are entirely eliminated. The ether patient who starts vomiting in the corridor on the way back to his room or ward made more trouble than we realized. Every one took the distressing scene as an occasional necessity, but it certainly never made it any easier for others to face the ordeal of an operation.

The advantages of nitrous oxid anesthesia are best appreciated in the wards, and it is here that the hospital gets back some of the initial cost. It costs a hospital money to care properly for a noisy vomiting ether case in a side room, not only in the nurses' time devoted to the case, but in the effect on the other patients. Comfortable ward patients are as curious as children, and the full details of the ether room scenes never fail to reach the newest patient, creating in him added apprehension and dread. It costs money to have house doctors and head nurses busy explaining away the apprehensions and dread of an operation, and to keep the courage up even after the surgeon has convinced as to the necessity and comparative safety of the impending operation. The return of a patient to his ward bed conscious and comfortable directly from the operating room gives a very different impression as to an operation from that given by a return after a day or so spent in the side rooms. Every patient knows that side rooms are for things the others must not see. It costs money to keep a private room patient convinced that water is withheld for his own good, and convinced kindly and tactfully enough to dispel the suspicion that it is but a rule and red tape that should not apply in his case.

With pure gases, vomiting is extremely rare: when morphin is used it comes about as must be expected from the use of this drug independent of anesthesia, and it resembles morphin vomiting in type. Pneumonia is apparently much less frequent with nitrous oxid, and the same is true of postoperative shock; but the cause of either of these in any given case is so obscure that it is hard to fix responsibility. Since we began the use of nitrous oxid, there have been many other changes and improvements in the care given our patients which should have an effect on the pneumonia and the surgical shock percentages. We are certainly getting much less postoperative shock and pneumonia than formerly, and nitrous oxid has undoubtedly contributed largely to this change.

Many patients, especially minor operative patients, are able to leave the ward much sooner. Not only is the day in the ether room lost, but it often requires another one in the ward to bring back the expended energy. The cost of many extra days' treatment saved can properly be credited against the gas anesthesia bill.

ADMINISTRATION

Under the administration of nitrous oxid, this paper can mention only a few observations of a skeptical hospital administrator who has watched the development of skill in its use. More than half of nitrous oxid anesthesia was once carbon dioxid asphyxia: blue-black patients were the rule. Now we know that cyanosis at any stage of the anesthetic is evidence either of poisons in the gas or of faulty, incompetent administration. It is not necessary, and is always harmful. Enough oxygen should be given at all times to preserve normal color, but more is a waste. Perfectly normal color can be maintained while the patient is presenting all the symptoms of asphyxia, including convulsions. For this reason, rebreathing to any extent is dangerous, and is not justified by the gas saved. Without the color to guide, the percentage of carbon dioxid in the alveolar air may mount unnoticed to levels dangerous through its effect on the brain centers.

The lesser degree of muscular relaxation in nitrous oxid anesthesia is sometimes annoying to the surgeon. It can be overcome by the mixing of a little ether vapor when the relaxation is needed, and all machines are equipped to do this. The results in the matter of losing the advantages of the nitrous oxid anesthesia are in exact proportion to the amount of ether used.

Proper appreciation of nitrous oxid as an anesthetic and an analgesic has been delayed by the fact that it could be used by the unskilled without horrible results traceable directly to the lack of skill, and by the fact that it was mentally classed by anesthetists with ether, chloroform and ethyl chlorid as an anesthetic, and its effect expected to correspond with that class. Temporary harmless conscious analgesia for dentistry, childbirth and other minor surgery may seem too good to be true, but it is at hand. Analgesia and unconsciousness without a profound or lasting impression on the central nervous system is the ideal for major surgery. Nitrous oxid in skilled hands can produce both, in unskilled hands, neither.

New Possible Source of Vanilla.—According to correspondence from J. F. Boomer, Manila, in *Daily Consular Reports*, a new vanilla-producing plant has been found in the Island of Mindoro, Philippine Islands, called *Vanilla ovalis*. The vanilla of commerce at present is the product of *Vanilla planifolia*. The plant is found both in open ravines and in the deep forest, but is not plentiful. The Bureau of Education of the Philippines is investigating the possibility of propagating the plant and developing it as a source of vanilla extract for trade purposes. The plant has roots similar to those of the amlong, but are superior, as they are pure white and require no bleaching. The roots are used for basket making.

PELVIC INFECTIONS AND THE APPLICATION OF DRAINAGE

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The subject of pelvic infection should not be discussed without emphasizing the fact that the condition is to a very large degree preventable. When it is recognized that the majority of cases are due to gonorrhea, and that the next most common causes are abortion, especially induced abortion, and labor, it is obvious that appropriate education of the laity and the profession would do much to eliminate this complication. We should therefore lose no opportunity to teach the public that gonorrhea is a very serious disease and that the production of abortion is a dangerous practice, and we should try to make the general practitioner realize that labor is a surgical procedure and requires strict asepsis.

While it is true that the gonococcus is the primary cause of the majority of pelvic infections, it must be borne in mind that it is a single infection for a very short time, usually not more than two or three days, and that the nature of the mixed infection is of much importance. When the complicating organism is the staphylococcus or colon bacillus, the outlook is usually favorable, but when it is a streptococcus or pneumococcus a very guarded prognosis is necessary. It is essential, therefore, to the intelligent treatment of these cases that whenever drainage is performed, a culture be made and the exact nature of the infection determined. The identification of the infecting organisms not only aids us in the prognosis, but makes possible the proper application of specific therapy. In cases complicated by the staphylococcus or colon bacillus, an autogenous vaccine, administered daily in small doses, is often of great value. When the streptococcus is present the antistreptococcus serum may be used to advantage. Fifty c.c. should be given every six hours until a favorable reaction occurs. In my observation these measures are too often not resorted to early enough to give us the best results. Particularly in cases in which the abdomen has been soiled by the rupture of a tube in operation it is much wiser to give a large dose of serum as a prophylactic than to wait until an infection has developed.

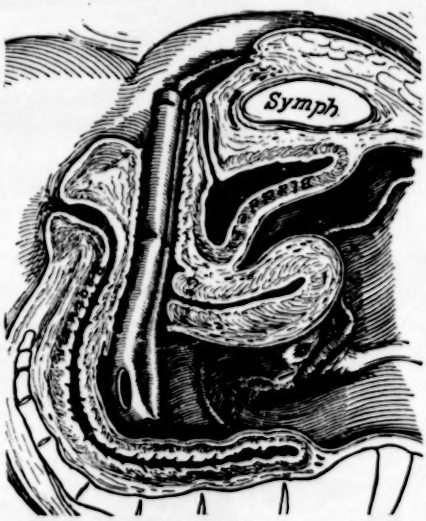

Fig. 1.—Double tube drain in position in posterior cul-de-sac.

As these cases are usually first seen by the family physician, we should, so far as possible, teach him their proper management. In my observation, the medical treatment of acute cases is usually too vigorous. For instance, a resort to frequent and continued purging often defeats Nature's effort to limit the infection by walling it off. In numerous cases I have found the doctor much exercised over the failure of his efforts to produce free catharsis. The abdomen is distended and vomiting is frequent, and he thinks he has obstruction. The fact is that Nature has splinted the intestine to limit the spreading of the infection, and therefore the doctor's medicine is ejected. The use of morphin, particularly before a diagnosis has been made, cannot be too strongly condemned as it checks the secretions, increases the vomiting and obscures the diagnosis. A liberal use of the ice-bag to the abdomen will usually relieve the pain. The stomach should be kept empty of both water and food. If vomiting is present, stomach lavage usually relieves it and puts the intestines at rest. Thirst can be relieved by frequent slow saline enemas. The important thing is to disturb the patient as little as possible.

The chronic cases are, unfortunately, very often subjected by the general practitioner to even more serious mistakes in treatment. The use of tampons, douches, suppositories, posture, etc., gives only temporary relief, and the repeated acute congestions and chronic inflammatory processes lead to gross pathologic changes. The resulting physical distress causes great disturbance of the nervous equilibrium with the development of various neuroses and occasional psychoses. Even after radical operation these conditions may persist for a long time for it is well known that the nervous tissue, being the most highly organized, is the slowest to repair. The probability that an early, careful radical operation would restore these patients to a practically normal condition should prevent persistence in purely palliative treatment.

In the surgical treatment of pelvic infections, the judgment gained in long experience is necessary to the proper application of whatever rules may be formulated. To operate during the storm of acute pelvic infection spells disaster many times. Usually we must give Nature time to limit the infection by protective adhesions and to develop a specific immunity; but if the patient is seen early, and the diagnosis is reasonably positive, it may be good practice to operate immediately. A history of previous attacks will aid materially in determining the best course to pursue. A beginning general peritonitis, as evidenced by rapid pulse, high temperature and general or local abdominal rigidity or tenderness, usually contraindicates early surgical interference.

There are certain principles of drainage which are almost axiomatic and failure to follow them results

in injury to the patient, if not death. The most important of these principles is that the lowest level of a cavity should be the highest point for the insertion of drainage. It follows, therefore, that the culdesac should always be the point for drainage in pelvic cases, rather than uphill drainage through the abdominal wall. There are, however, two exceptions to this rule. The first is the insertion of a small wick drain in the abdominal incision as an indicator of hemorrhage following myomectomy. The second is when the infection is walled off in front of the bladder and attached to the anterior abdominal wall. This type will be discussed later.

As has been said, most acute pelvic infections are gonorrheal in origin. As a rule they are best treated in a palliative way, as experience has taught that, within certain limits, they run a definite course. Walling off the infected area and the development of immunity seems to be Nature's way of handling the situation, and early surgical interference may only serve to spread the infection. Those cases which develop cellulitis accompanied by a distended culdesac are best treated by posterior vaginal puncture and the insertion of the double drainage tube for a few days. A rather stiff rubber tube is bent on itself in the middle, a linen stitch is placed near the ends to hold the two halves parallel, and a good-sized opening is cut in the outer side of each half just below the bend. The advantages of this tube are that it has a smooth, blunt end for insertion through the puncture, it gives free drainage and allows irrigation with a return flow. Figure 1 shows this tube in position in the culdesac. It is left usually from five to seven days. In case the culdesac opening becomes clogged or contracts sufficiently to prevent free drainage after the removal of the tube, the opening may be stretched with a uterine dressing forceps and the cavity irrigated with a mixture of one dram of tincture of iodin to a pint of sterile water. A Leonard douche is the most useful and convenient instrument for irrigating the cavity.

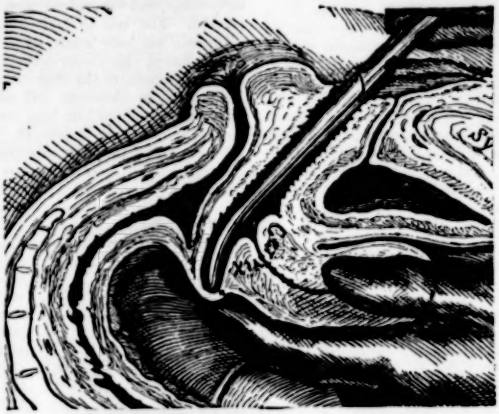

Fig. 2.—Puncture of vaginal fornix, bimanual method.

The Fowler position is a very important aid in securing thorough drainage in these cases and should always be employed. When, for any reason, the Fowler position cannot be used, the drainage will be greatly improved by elevating the head of the bed about 10 inches.

One caution should be given for the performance of culdesac drainage in these acute cases. The broad ligament should be explored through the opening with the finger and any adhesions that may be holding pus should be broken up. Frequently on such exploration one finds walled-off pus cavities which, when broken into, will liberate as much pus as the first incision. I have had the experience, when not taking such precaution, of having to return my patient to the operating room because the pulse and temperature did not return to normal. After breaking up the inflammatory wall and liberating the pus which was undoubtedly present at the time of the former operation, the temperature and pulse immediately became normal and rapid convalescence ensued. I feel quite sure that if these precautions are taken, a number of cases will be saved a secondary operation following drainage of the culdesac. I am firm in the belief that free evacuation of every pus focus in the pelvis will give the tube such free drainage at the fimbriated end that it will not be likely to cause trouble later.

Fig. 3.—Gauze drain in posterior culdesac.

Posterior vaginal puncture with tube drainage usually gives immediate relief in the acute cases, without any surgical risk. Most of the cases so treated result in apparent cure and further operative interference is unnecessary, or may be refused by the patient. If there is a history of frequent pelvic infections, more radical measures are called for than culdesac drainage. If the tubes remain enlarged and tender and the patient complains of constant or periodic pains of greater or less intensity, a radical operation

is indicated. This operation can be performed more safely during the interval than during the acute attack, unless the patient is seen early. It is generally best to wait from two to three weeks after the subsidence of the acute attack and the return of the pulse and temperature to normal. By so doing time is given for the absorption of the exudate, thereby lessening the amount of adhesion. The inflammatory wall also becomes stronger, thereby minimizing the danger of dissemination of the infection. All of us have had the misfortune of easy rupture of the tubes in the dissection, when probably a few days recuperation would have avoided such a complication. Some operators state that a leakage during a pelvic operation is rarely followed by complications, but in my experience this is not the case. This is shown by the fact that a number of years ago, when pelvic gravity drainage was not so frequently used as at present, we had many more complications and a much higher mortality.

I advocate most strongly the necessity of a complete salpingectomy in these chronic cases. A number of very good operators still tie off the tube *en masse* at the cornua of the uterus, leaving at least three fourths of an inch of the stump of the tube. These stumps frequently cause as many symptoms of the old salpingitis as were present before the operation. Many times the trouble is not relieved, the large stump causes the formation of new adhesions and the trouble is actually increased. A wedge-shaped piece, including the entire stump of the tube, should be cut out of the cornua and the edges approximated and whipped over. It should be said, however, that in most of the chronic cases there is a metritis requiring a hysterectomy for complete cure. My own experience has been that it has been nearly always the operation of choice.

In cases of pyosalpinx of the chronic type in which there has been no evidence of an acute exacerbation for a long period, and if the patient's condition is good, no drainage is needed in case of rupture during the operation, as the contents of the tubes are usually sterile; but if the patient's condition is below par or if there is the least suspicion of an active infection, it is good practice to insert the culdesac pelvic drain.

In all cases in which drainage is indicated following a radical operation for pyosalpinx, I prefer a silver nitrate or iodoform gauze culdesac drain. The drain should be made by folding a piece of gauze 1 yard wide and 1½ yards long into a 1½ inch strip. In cases in which the drain may be needed, the vagina should be prepared before operation, by scrubbing and thorough rinsing with sterile water, drying and painting, through a speculum, with equal parts of tincture of iodin and alcohol. When the drain is to be introduced, the left hand is encased in a long glove, and the vulva having been surrounded with sterile towels, the operator inserts a long forceps, curved on the flat, into the vagina, and with the right hand in the abdomen, locates the proper point for puncture of the culdesac by bimanual touch, as shown in Figure 2. The puncture is then made by making pressure on the forceps or, preferably, by making an incision over the point of the forceps with a scalpel held in the right hand. The blades of the forceps are then pushed through the incision and the nurse is instructed to hold the handles on the outside and keep the blades open until the end of the drain is placed between them. The blades are then closed and the nurse gently withdraws the forceps until the end of the drain appears at the vulva. The operator then changes gloves and the remainder of the drain is placed in folds posterior to the uterus, as shown in Figure 3. This arrangement of the gauze facilitates drainage and subsequent removal is easy. This bimanual method of introduction enables the operator to make the puncture rapidly and accurately, at whatever point he may elect.

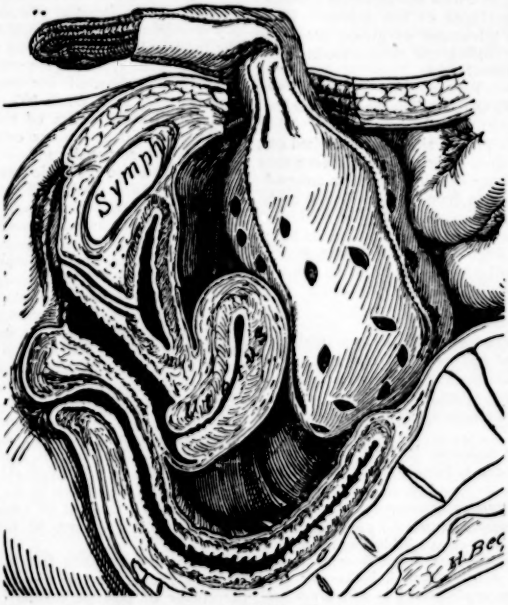

Fig. 4.—Abdominopelvic bunch drain in position.

It had been my practice to remove the culdesac drain after five days, at one sitting, but after reading the plan advocated by Wertheim's assistant, I decided to try it and in about fifty consecutive cases have followed his technic. This process was to remove half the drain in five days, one half of the remainder on the seventh day, and the rest on the ninth day. As 90 per cent. of these cases developed an infection of the abdominal wound, I abandoned the method. In my judgment, the infection of the abdominal wound was caused by a collection of exudate above the gauze. As the gauze became saturated with exudate, drainage was impeded or entirely stopped, so that before the gauze was entirely removed, sufficient backing up had occurred to produce the infection. By complete removal at the end of five days, this danger is

averted. It was further noted that the cases drained much longer when the drain was removed by the three-step method than when it was entirely removed at the end of five days. Since returning to my usual method of removing the entire gauze drain on the fifth day, I have had in about the same number of cases but one case of abdominal wound infection.

The administration of gas for the removal of the drain is much appreciated by the patient. It saves the patient pain and shock and relieves the operator from the charge of being rough and heartless.

When the infection is anterior to the uterus and attached to the anterior abdominal wall, the bunch drain described by Mikulicz and modified by Rovsing by using a rubber bag covering is very useful. It is applicable sometimes also to cases of pus appendicitis, incompletely walled off, in which the infection extends into the pelvis and in front of the uterus. This method has the double advantage of giving excellent drainage and also of excluding the clean intestine and omentum from the infected area.

This drain is shown in Figure 4 and consists of an oiled silk bag filled with gauze. The bag is 5 inches in diameter when inflated, and 10 inches long. The oiled silk cloth is cut in proper shape and stitched on a sewing machine and then inverted so as to turn the edges inside. The drainage openings are then snipped with scissors at intervals to correspond with the area to be drained. The drain inside the bag is made by folding a piece of gauze 1 yard wide and 3 yards long into a 1½ inch strip. Beginning on the second day, a little of the gauze is withdrawn daily, and the entire bag with the remaining gauze on the fifth day.

CONCLUSIONS

1. Preventive measures should be promoted by instruction of the public and by a better technic.
2. The infecting organism should be determined and specific therapy employed when indicated.
3. The preoperative treatment should not be too vigorous.
4. When drainage is desirable, it should, with rare exceptions, be through the culdesac, and it should be aided by posture.

A Sanitary and Satisfactory Substitute for the Free Lunch.—In some regions of our large cities inhabited by the poorer classes, there are few eating places except those connected with saloons. The food is badly cooked, indigestible and unpalatable, and often the meals served in homes are not much better. Moreover, home cooking done over a hot fire in the kitchen that serves also as a family dining room means acute discomfort to the whole family in summer. The physical and social results are both bad. Public kitchens which dispense good cooked food at low cost have been organized in a few cities to meet the needs of the situation. Holland Hudson describes in the *Modern Hospital* such a kitchen (said to be the first in New York) under the direction of the New York Association for Improving the Condition of the Poor. The longshoreman can now obtain a substantial meal of well-cooked food, served on a table from clean dishes, at less cost than the "pony of red-dog whisky" which accompanies food at the free-lunch counter. Housewives can procure hot cooked food to serve at home. The kitchen is self-supporting. A high sanitary standard is maintained. All employees are compelled to pass a rigid physical examination, and no one is employed who has any communicable disease. The kitchen is well screened from flies, and recently received a score of 100 points from the department of health. A branch kitchen is soon to be established.

THE WASSERMANN TEST IN THE MEDICAL DISPENSARY *

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Any estimation of the prevalence of syphilis in a community by means of clinical symptoms alone is hazardous. The protean manifestations of the disease, the latent type of both congenital and acquired forms, and the denial of a specific history, either through ignorance or wilfully, render its diagnosis extremely difficult in many instances. In recent years, however, the introduction of the Wassermann reaction has aided, in a marked degree, the proper classification of many heretofore obscure conditions.

To be of greatest value in the diagnosis of a disease, the specific test for that disease, whether for laboratory or clinical purposes, must be practically constant. The thousands of Wassermann tests made on patients suffering from syphilis give ample proof that the test is practically constant for this condition. Various estimates give from 60 to 100 per cent. positive reactions in different stages of the disease. Less than 0.5 per cent. of conditions other than syphilis react positively; these usually give a negative reaction in a short time with no syphilitic treatment, or occur in diseases which are easily differentiated from syphilis. Therefore, in the Wassermann test we have a fairly reliable serologic means of estimating the prevalence of syphilis.

Based solely on clinical symptoms there are the oft-quoted figures of Erb, who gives 12 per cent. of syphilis in the adult population of Berlin, and those of Fournier, who states that 15 per cent. of adult Parisians have the disease. In the last three years Wassermann reaction surveys in hospital, asylum and municipal laboratories are giving us a clearer insight into the amount of this disease among certain groups of the community. Churchill[1] found that 28 per cent. of 101 children examined at the Children's Memorial Hospital of Chicago gave a positive reaction. In 111 cases admitted to the Children's Hospital in Boston, Lucas[2] found 31 per cent. infected. Browning[3] found 14 per cent. of syphilitics in 331 children in the outpatient department of a children's hospital of Glasgow. Holt[4] of New York found 6 per cent. of infected children in his series.

Routine Wassermann tests are now made in many insane asylums. A few examples will show the high percentage of positive results on these patients. Of 600 inmates of the Oregon Insane Asylum, Watson[5] obtained a positive reaction in 20 per cent. with only 5 per cent. giving positive histories. Ivey[6] found 29 per cent. of the women and 25 per cent. of men infected in over 700 negro insane of Alabama. In 122 cases of nervous disease in the wards of the Western Infirmary of Glasgow, Browning[3] obtained 41 per cent. positives. In 104 prostitutes and 109 men classified as tramps, Browning found 100 per cent. of infection.

The general medical dispensary affords a medium by which we come in close contact with a certain

* From the Department of Experimental Medicine, University of Illinois.

1. Churchill: Tr. Am. Pediat. Soc., 1912, xxiv, 149.
2. Lucas: Boston Med. and Surg. Jour., 1913, clxix, 423.
3. Browning: Brit. Med. Jour., 1914, i, 77.
4. Holt: Am. Jour. Obst., 1913, lxvii, 1228.
5. Watson: Northwest Med., 1910, ii, 103.
6. Ivey: Med. Rec., New York, 1913, lxxxiv, 712.

class of persons in whom, through poverty, deficient education and mental instability, we might expect a higher percentage of syphilis than in the average of the community. For the last several months Wassermann reactions have been made as a routine test on practically every person attending the medical dispensary clinics of the University of Illinois College of Medicine, Chicago. According to the classification employed at this dispensary the patients attending the genito-urinary, gynecologic, pediatric, nervous, dermatologic, or surgical clinics are not included in this list. It embraces only those patients treated in the medical clinic.

In the technic of the test itself we employed from two to five antigens, never less than two. The antigens were the acetone insoluble fractions of beef and human hearts obtained from several different sources, including three made by myself; also alcoholic extracts of syphilitic liver. No cholesterinized antigens were used. The antigens were titrated in the usual way so that 0.1 c.c. of a one tenth dilution was employed in the test.

Both antichicken and antihuman hemolytic systems were employed, the former in all cases, the latter in about 25 per cent. In all tests in which both systems were used the results were identical. Washed chicken corpuscles were made up in a from 2 to 5 per cent. suspension and to this was added twice the titer of hemolysin. For complement both fresh guinea-pig serums and serums allowed to stand for seventy-eight hours in the ice-box were used. These gave similar results. The serum was diluted to 8 per cent., that is, 1 c.c. guinea-pig serum was added to 11.5 c.c. of sterile normal salt solution, and this titrated before each series of tests. Twice the complement titer was employed in the test.

All patients' serums were heated to 56 C. (132.8 F.) for one-half hour and used in amount of 0.1 c.c. After the patient's serum, the antigen and complement were added to the test tubes, the total volume was made up to 1 c.c. by the addition of normal salt solution and then incubated for one hour, after which 1 c.c. of sensitized chicken corpuscles were added and the whole again incubated for one hour, at which time the readings were made.

In those tests in which human corpuscles were employed we followed the method described by Noguchi.[7]

The Wassermann reaction was performed on 418 patients. These are classified in Table 1.

Fifty-six, or 13.4 per cent. of the total number reacted positively. Twelve were weakly positive or doubtful; eight of these were undoubtedly due to treatment. Omitting those who gave a weak reaction, and presented no history or other symptoms of syphilis, and adding those who reacted negatively but who had had the disease, we have 78, or 18.6 per cent. of this group who have suffered or are now suffering from syphilis. This at first glance is a high percentage, but when we consider that we are dealing with the ailing members of a class of society which are more or less unfortunate in the struggle for existence, the figures will not appear so high.

As to sex, of 89 women, 16, or 18 per cent., gave positive reactions, while 40, or 12.2 per cent. of 329 males were positive. This higher percentage of positives among women might lead one to believe that the disease was more generally prevalent among females than males. This, however, would be a false impression. While the majority of the women having this disease are found in the medical clinic, most of the men having syphilis attend other clinics, especially the dermatologic and genito-urinary.

The difficulty of diagnosis of syphilis in the medical dispensary, as in all other branches of practice, is increased by lack of adequate history and especially by the obscure manifestations of the disease. The vague answers given to questions relative to the history of the infection are of little value. In twenty-eight of the fifty-six positives a definite history was given, and this was obtained in many cases after the reaction was reported positive. On the other hand, many of the negatives gave a history simulating an earlier specific infection. The facts are forcibly presented in an article by Krumbhaar and Montgomery,[8] who, in a series of Wassermanns on 108 dispensary patients obtained forty-eight frank positives, seven doubtful and fifty-three negative. Of the positives, 35 per cent. gave negative histories and a large proportion of positive histories were obtained from those giving negative tests.

TABLE 1.—CLASSIFICATION OF FOUR HUNDRED AND EIGHTEEN CASES IN WHICH THE WASSERMANN TEST WAS PERFORMED.

	No. of Cases	Males	Females
Wassermann negative	350	278	72
Syphilitic	14	11	3
Nonsyphilitic	336	267	69
Wassermann weakly positive	12	11	1
Syphilitic	8	7	1
Syphilitic?	4	4	0
Wassermann positive	56	40	16
Congenital	5	2	3
Secondary	4	1	3
Tertiary	47	37	10
Total	418	329	89

A more important cause of incorrect diagnosis is the lack of symptoms pointing toward the syphilitic infection. Thus the tentative diagnosis at the first visit was other than syphilis in a majority of the positive cases. As in all first class medical dispensaries the first visit diagnosis is often made before all the laboratory returns are obtained and before a thorough physical examination is completed. Occasionally, for the primary diagnosis, a pronounced symptom, as constipation, myalgia or anemia, was given, until further investigation could prove the cause. But even with a complete physical examination the symptoms often were so vague that the diagnosis of syphilis could not be made from the clinical findings alone. Naturally it is in these cases especially that the Wassermann test is invaluable.

The tentative diagnosis of thirty-two of the fifty-six positives was other than syphilis. Findings similar to these were made by Krumbhaar and Montgomery, who state, "Among the forty-eight positive cases nineteen were tentatively diagnosed under other headings at the first visit, and in a large proportion of the remainder a good deal of uncertainty existed as to the specific nature of the cases."

In Table 2 the tentative diagnosis and the final diagnosis are presented. Frequently but one visit was made by the patient and the result of the Wassermann test could not be followed up. In a few of those cases

7. Noguchi, Hideyo: Serum Diagnosis of Syphilis, Philadelphia, J. B. Lippincott Company, 1910.

8. Krumbhaar, E. B., and Montgomery, C. M.: Syphilis and the Medical Dispensary, THE JOURNAL A. M. A., Jan. 24, 1914, p. 200.

in which the Wassermann is weakly positive the final diagnosis of syphilis is questionable. In some instances two diseases were actually present, the syphilitic symptoms being either quiescent or the manifestations of the accompanying condition being so prominent that syphilis was not considered; in others the symptoms might have been caused by a variety of conditions but with a positive Wassermann and favorable response to specific treatment they undoubtedly were due to syphilis and are so designated in the final diagnosis.

The value of the Wassermann reaction can best be demonstrated by the citation of a few cases. In Case 3, in a painter, plumbism was confirmed by laboratory findings. It is reasonable to suppose that this condition may produce a plus reaction, but tests in similar cases reacted negatively. In Case 26, the patient being the wife of the patient in Case 3, there was a history of two abortions and a positive test. Case 10, in a man of 50, was recognized clinically to be carcinoma of the stomach with liver metastases until three positive Wassermanns led to the employment of potassium iodid and mercury therapeutically; the patient improved remarkably, the liver decreased in size, the jaundice cleared, and the abdominal tumor in the region of the stomach disappeared. Case 18 resembles Case 10 closely in that several reactions were positive, but the treatment produced only a temporary improvement. The patient succumbed to the disease in another city. We learned that a necropsy was performed and carcinoma of the stomach found, but we were unable to obtain a report of the other findings. The diagnosis was carcinoma and syphilis.

In Case 31, a girl of 22 had an enlarged thyroid, pulse of 140 and other symptoms of exophthalmic goiter. She had been treated for this disease for over two years at various hospitals and dispensaries, with no improvement. Wassermann tests were persistently positive. After being on specific treatment for four months the pulse rate was lowered to 90, the goiter had reduced in size, and the patient has now resumed her work as an office girl. The Wassermann test, however, is still positive. In connection with this case it is interesting to know that a brother (Case 7) had a peculiar train of symptoms which led to several diagnoses. The positive Wassermann led to a final diagnosis of syphilis, or rather of juvenile tabes. I have learned that under specific treatment the boy is now apparently well. Wassermanns made on the mother and two other children were negative. We could not obtain a test on the father, but learned that he had been a drunkard and had a "bad disease," presumably syphilis. The clinicians concluded that both these cases were of congenital origin. I am not attempting at this time to explain the negative reactions of a portion of the family and the positive reactions of the others.

Six of the fifty-six positives had tuberculosis with syphilis. The criticism may be made that tuberculosis is one of the conditions that occasionally give a positive reaction. In this series over thirty patients suffering from tuberculosis reacted negatively. Besides these we have another series of over fifty tuberculous cases in which the tests were negative, so that whenever a positive test was repeatedly obtained in a tuberculous patient the diagnosis of syphilis was made. The same doubt may be expressed with regard to the patients with carcinoma. A large series of malignant conditions have reacted negatively, however, leading us to assume that whenever persistent positive Wassermanns are present in cases of malignant tumors or in those diagnosed as such, either syphilis or syphilis with carcinoma is present.

TABLE 2.—CLASSIFICATION OF POSITIVE WASSERMANN REACTIONS

No.	Tentative Diagnosis	Final Diagnosis*	History of Syphilis	Wassermann Test †
1.	Pulmonary tuberculosis	Pulmonary tuberculosis	..	+
2.	Syphilis		0	+
3.	Lead poisoning	Lead poisoning	0	+
4.	Chronic plumbism, ulcers of leg		0	+
5.	Constipation		0	+
6.	Rheumatism		0	+
7.	Juvenile tabes?		0	+
8.	Arteriosclerosis		0	+
9.	Gastritis	Tabes	0	+
10.	Carcinoma of stomach and liver		0	+
11.	Syphilis		..	+
12.	Syphilis		..	+
13.	Syphilis		..	+
14.	Tuberculous epididymitis	Tuberculosis	0	+
15.	Bronchitis		0	+
16.	Syphilis		..	+
17.	Syphilis		0	+
18.	Carcinoma of stomach	Carcinoma	0	+
19.	Constipation		0	+
20.	Syphilis		..	+
21.	Bronchitis		0	+
22.	Myalgia		..	+
23.	Vertigo		0	+
24.	Endocarditis		..	+
25.	Syphilis		..	+
26.	Syphilis		..	+
27.	Syphilis		..	+
28.	Anemia		0	+
29.	Constipation		0	+
30.	Vicarious menstruation		0	+
31.	Exophthalmic goiter	Exophthalmic goiter	0	+
32.	Bronchitis, neurasthenia		0	+
33.	Pleurisy, myalgia		0	+
34.	Syphilis and tuberculosis	Tuberculosis	..	+
35.	Syphilis		..	+
36.	Bronchitis		..	+
37.	Syphilis?		..	+
38.	Syphilis?		0	+
39.	Syphilis?		0	+
40.	Anemia		..	+
41.	Syphilis		..	+
42.	Bursitis	Bursitis	..	+
43.	Syphilis?		0	+
44.	Syphilis		..	+
45.	Constipation		0	+
46.	Syphilis?		..	+
47.	Syphilis?		0	+
48.	Tuberculosis	Tuberculosis	..	+
49.	Bronchial asthma	Asthma	0	+
50.	Aneurysm of aorta	Aneurysm	..	+
51.	Tuberculosis	Tuberculosis	..	+
52.	Syphilis		..	+
53.	Hiccough		..	+
54.	Tuberculosis	Tuberculosis	..	+
55.	Gastritis		..	+
56.	Syphilis		..	+
57.	Bronchitis		..	+
58.	Syphilitic aortitis		..	+
59.	Malaria	?	0	+
60.	Myalgia	?	0	+
61.	Syphilis?		..	±
62.	Pulmonary tuberculosis	Tuberculosis	..	±
63.	Congenital syphilis		0	±
64.	Constipation	?	0	±
65.	Syphilis?		0	±
66.	Arteriosclerosis		..	±
67.	Anemia		..	±
68.	Tuberculosis	Tuberculosis	0	±

* In each of these cases the final diagnosis was of syphilis. Attendant conditions as noted.

† The sign + indicates Wassermann test positive; ±, weakly positive.

In order to reduce the errors of the test, whenever possible it was repeated. When only one visit was made this could not be done. Tests were made more than once on over half of the sixty-eight strong and weak positives. Repeated tests naturally were of most value in those reacting weakly positive. In some cases

a weakly positive reaction when repeated would be negative; others would be frankly positive, and still others would be again weakly positive.

When a history of syphilis was obtained, or specific treatment had been used and the reaction showed but 25 per cent. hemolysis the case is called syphilitic. With no history, symptoms or other manifestations of syphilis and with but one doubtful test the diagnosis of syphilis is questionable. With several negative tests after one doubtful positive the test was classified as negative.

Many cases diagnosed as suspected syphilis reacted negatively. Although the Wassermann test is of great value when positive, still repeated negative reactions are of great service in aiding diagnosis. Included among the conditions reacting negatively are diabetes mellitus, acute articular rheumatism of both streptococcal and gonorrheal origin, endocarditis, arteriosclerosis, gastritis, gastric ulcer, neurasthenia, tuberculosis of lungs, of lymph glands, and of epididymis, epilepsy, myalgia, constipation, icterus, lead poisoning, intestinal parasites, Hodgkin's disease, cholecystitis, exophthalmic goiter, bronchitis, anemia, myocarditis, emphysema, neuritis, carcinoma of breast and carcinoma of stomach.

SUMMARY

A positive Wassermann test is of inestimable value in the diagnosis of syphilis in the medical dispensary.

The unreliability of histories and the protean nature of the disease make it extremely difficult of correct clinical diagnosis in all cases.

Fifty-six positive Wassermann reactions were obtained in the routine examination of 418 patients. Only 50 per cent. of those with a positive test gave a history of having syphilis. Twelve weakly positive reactions were obtained, four patients being tested only once; without history or symptoms the diagnosis of syphilis could not be made in these. Repeated negative tests were of assistance in diagnosing nonsyphilitic conditions in which false histories of previous infections were obtained.

EFFICIENT DISPENSARY CLINICS A REQUISITE FOR ADEQUATE COPING WITH VENEREAL DISEASE *

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Fifteen years ago tuberculosis was prevalent, probably more prevalent in proportion to the population than it is today; but comparatively few persons were thinking and talking about it as a public problem of magnitude. Today venereal diseases are prevalent, probably no less prevalent in proportion to the population than they were ten or fifteen years ago; but the general public is but just beginning to allow us to talk about them as a public problem of magnitude. A suggestive parallel may be drawn between tuberculosis on the one hand and venereal disease on the other, with respect to the growth of public interest in their treatment and prevention. Physicians and others close to the facts have realized for many years how grave and widespread was the problem presented by tuberculosis; but it is only ten years since the campaign against it was organized, nationally, when the National Association for the Study and Prevention of Tuberculosis was formed. A few local antituberculosis committees had preceded this general body. Since 1905 a wonderful development has taken place. A great educational campaign has spread to every corner of the country. Tuberculosis is a name to conjure with; a word to raise money with; $20,000,000 was spent by public and private associations in treating and preventing tuberculosis last year. Even more remarkable has been the increase in facilities providing for diagnosis and treatment.

In 1905, there were only eighteen tuberculosis sanatoriums, providing 673 beds. In 1915, there are over 500 sanatoriums, providing some 30,000 beds. Up to 1905, only eighteen dispensary clinics for tuberculosis had been opened in the United States. In 1915 there were over 400 such clinics and the number is increasing with great rapidity. These vast facilities for treatment have been established within this short period for a disease which is no more prevalent today than it was ten years ago, so that both sanatoriums and clinics are caring for patients who formerly were either cared for by private medical practice or not cared for at all. The establishment of sanatoriums and clinics has been furthered largely by physicians and is still proceeding vigorously, with their support. The conclusion is inevitable that private practice as an influence in dealing with tuberculosis is recognized by the profession as inadequate, that during the last ten years it has been, relatively speaking, a static factor, so far as caring for numbers of patients is concerned; and that the chief means whereby more adequate facilities for the diagnosis and treatment of tuberculosis have been obtained during the past ten years has been by the establishment of public or semipublic facilities.

Consider now venereal disease, which, as has been suggested, is in some ways a parallel problem. The treatment facilities for syphilis and gonorrhea include private medical practice, dispensary clinics and hospitals (chiefly the clinics), quacks, and self-treatment. The fact that large numbers of patients treat themselves, particularly for gonorrhea, with medicines purchased on the advice of drug clerks or friends, and the persistent flourishing of quacks and advertising institutes, indicate that private medical practice and medical institutions taken together do not meet the situation. We all agree that treatment by quacks and self-treatment by patients are undesirable; but quacks persist, though the limitation of advertising and individual prosecution may diminish their numbers substantially and have done so in certain communities. Self-treatment is also prevalent. One may fear that self-treatment too often takes up the slack when the number of quacks is reduced. Doubtless the truth is that quacks and self-treatment can only be driven out when adequate substitutes are provided.

To be adequate, treatment facilities must fulfil six conditions:

1. Skilled Service: The medical service must be well trained in the diagnosis and treatment of these diseases.

2. Equipment: The physician must have at command technical equipment for diagnosis and treatment according to modern medical standards.

3. Organization: Facilities must be organized in proper correlation with the health departments of the

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local community and of the state, and with related social agencies and institutions.

4. Accessibility: The facilities must be available at such places and hours as do not involve undue sacrifice of time, money, or convenience to the persons who need to use them.

5. Cost: The cost of the facilities must be within the means of the patients.

6. Sufficiency in Amount: The amount of such facilities meeting the above conditions must be sufficient to cover 100 per cent. of the need in any community.

Let us consider private medical practice in relation to these six criteria of adequate treatment of venereal disease. As to the first, practically all the existing supply of diagnostic skill is available from men giving part or all of their time to private practice. When, however, we come to the test of equipment, it must be borne in mind that modern medical standards demand fairly elaborate equipment for adequate diagnosis and treatment of these diseases. The cystoscope; various instruments for examination and treatment of conditions in bladder and urethra; laboratory facilities for Wassermann tests; a microscope for the examination of smears; a dark-stage attachment for the diagnosis of primary syphilis; sterilizing equipment; these have all been listed by committees of genito-urinary surgeons and specialists in syphilis in New York as minimum requisites of equipment for medical men working in clinics dealing with syphilis and gonorrhea. Undoubtedly, therefore, they may be regarded as requisites for medical men treating these diseases in their offices. When it is borne in mind that the cost of the instruments alone would run to at least $300, and might easily be double that sum, and that in many localities private practitioners have no local facilities for Wassermann tests, it may well be questioned to what extent adequate equipment for the diagnosis and treatment of syphilis and gonorrhea can generally be found in the private offices of men not specializing in the care of these diseases.

As to organization: The public-health services of a few states have begun to assist private practice by providing laboratory facilities, but, in general, private medical practice remains individualistic, unorganized, so far as relationships to public health or social welfare agencies are concerned. As to accessibility, in the larger communities we find specialists in these diseases whose hours, as a rule, are not such as to be available to the mass of the population, who cannot afford to lose much time from work. Office hours are fixed according to the demands of the clientele from which the specialists draw their main body of patients. The mass of medical practitioners, not specializing, of course have hours which in many instances are accessible to all classes in the community, that is, hours during the evening as well as the day.

Now as to the cost of treatment. Syphilis and gonorrhea are expensive diseases. The period of treatment is not short at the best and may be extremely prolonged. So far as I can ascertain from physicians who are devoting special attention to genito-urinary diseases, they require that private patients with acute gonorrhea, for example, come for treatment three times a week for a period which is at least six weeks, and it may be several months before less frequent visits are allowed. In this statement I am merely referring to the minimum which appears to prevail in the private practice of physicians who are regarded as experts in dealing with gonorrhea, but the office rates on which the following cost estimates have been based are those of the general practitioner, not of these specialists. The cost of such treatment, including also the necessary laboratory examinations, etc., and estimating a very low rate for office visits, would be not less than $100 for the first six months, and might be very much more. Furthermore, a large number of male and female patients with gonorrhea come to the physician in chronic stages, or when complications have arisen, requiring surgical operations. This further adds to the expense. The cost of medicines used for gonorrhea is also a large item, particularly at the usual retail prices levied by drug stores, being hardly less than $2 a week, and often much more.

The treatment of syphilis, while requiring less frequent visits to a physician, often demands several injections of salvarsan, which would cost the patient from $10 to $50 apiece, and always requires a period of treatment such as to cost the patient at least as much, usually more, than has been specified for gonorrhea.

The first infection of gonorrhea usually arises in the case of young men before the age of marriage, or between 17 and 25 years. Fully five sixths of young men at this age, in any community, are working men or clerks, or are starting in business or professions, and their earning capacity is between $400 and $800 annually. The expenditure of such a sum as $100 during a period of six months is a very serious item. In the case of married men, or men with dependents, the annual income among the great bulk of our self-supporting population runs, even in large cities, only between $800 and $1,200. The expenditure of 15 per cent. to 25 per cent. of such an income for the treatment of one of these diseases is out of the question for these persons. They can pay for some treatment, but not for enough or good enough treatment.

The sixth criterion was the question, Are there sufficient facilities in the community, meeting the above conditions, to cover 100 per cent. of the need? Has not the preceding discussion indicated the answer? Private medical practice has already given up attempting to meet the needs of "the poor." They go to clinics in the cities where there are such, and where there are no clinics they, for the most part, go to the drug stores. Those who are above the poverty line, but who have only a moderate income, are, as the preceding discussion has endeavored to show, unable to afford the necessary minimum cost required by modern standards for treatment of syphilis and gonorrhea when this treatment has to be carried on in private offices. In a word, treatment for syphilis and gonorrhea by private medical practice is too costly when it is adequate, and when it is not too costly to meet the needs of the whole population, it is likely to be inadequate.

If ten years ago a similar analysis had been made of the facilities for the medical care of tuberculosis, a similar conclusion might have been reached. Whether such an analysis was ever made I do not know. As has already been indicated, however, the actual history has been that physicians themselves have labored to found sanatoriums and dispensaries for tuberculosis, instead of leaving these thousands of cases within the care of private practice. Physicians have done this because they have recognized that there was a public need to be met, and that sanatoriums and

clinics were the only means by which adequate treatment facilities could be provided. The parallel with venereal disease is obvious. Gonorrhea and syphilis are more prevalent than tuberculosis, and their medical treatment is more costly. There is at least as much need to do for venereal disease what began, ten years ago, to be done for tuberculosis.

As yet outpatient clinics have been established chiefly to "help the poor" and also to provide centers for teaching medical students and to increase the knowledge of practicing physicians. The medical service has usually been voluntary on the part of the staff. Can a high standard of efficient treatment be secured in such clinics, or does the organization of a service with considerable numbers of patients to be dealt with within a limited time necessarily mean hasty and slipshod work? Criticism of dispensary clinics for inefficiency has been forcibly voiced within recent years. Unless it can be shown that clinics can be efficient, it is not worth while perhaps that they should be established on a large scale as public health measures for dealing with syphilis and gonorrhea.

While within recent years criticism of dispensary clinics has been in the main justified, this has been an evidence of growth rather than of decline, and, in my opinion, sufficient data have been gathered to show that clinics can be efficient, if certain conditions are met.

The fact that clinic efficiency can be tested and progress thus stimulated, because it can be measured, is, to my mind, perhaps the fundamental point. During the last few years several methods of testing medical efficiency in outpatient work have been devised and applied in certain clinics. The methods are chiefly two:

First, the statistical method, which chiefly tests the amount of inefficiency. If it is found that of 500 patients with acute gonorrhea, 40 per cent. paid only one visit, obviously the clinic's inefficiency was hardly less than 40 per cent. We cannot say that a patient has been given satisfactory treatment even if he has paid thirty visits to such a clinic. We can say that he has been given ineffective treatment if he has paid only one, two, or three visits, unless the clinic can demonstrate that it has sent the patient into other good hands. Thus the mere counting of the percentage of patients paying one, two, or three, four or five visits, and so on up to the high figures, is an extremely useful, though necessarily rough means of testing clinical efficiency and of stimulating progress. Such tests have been conducted at the Boston Dispensary, Lakeside Hospital, Cleveland, Cornell University Medical College, and have been published. The method is clear, the need for increase in efficiency is urgent. Such tests should be routine everywhere. They take little time and pay big returns. It might be mentioned that in the male genito-urinary clinic of the Boston Dispensary the percentage of patients paying only one or two visits has been reduced as follows:

In 1911-1915 this percentage was 47 and the percentage of patients paying more than five visits was only 32.5. In 1914-1915 the percentage of patients paying only one or two visits has been reduced to 40 per cent., and of patients paying more than five visits has been increased to 45 per cent. In the evening work of the same institution, the results have been still better, for the proportion of patients paying one or two visits has been only 24.5 per cent., and those paying more than five visits 50.5 per cent. I do not mention these results as being indications that satisfactory results have been reached, but that improvement is possible, and that progress can be measured.

A more thorough and scientific test involves the actual examination of the clinical records by one of the physicians in charge. Each patient must be judged as cured, improved, pending, lost (one-visit and two-visit patients are usually lost), and the percentages may be stated. In the three clinics previously mentioned, such tests have been made and the percentage of cured patients varied from nine to twelve. You may think this percentage small, and it is small, but gonorrhea is a difficult disease at best, so far as a layman can judge. The comparison is not between the 12 per cent. of cures in a certain clinic and 100 per cent. of cures theoretically possible, but between 12 per cent. in a clinic and the proportion of cures reached in private practice with a similar class of patients. Who knows the latter percentage?

Under certain conditions I believe that outpatient clinics can be efficient. And these general conditions might be formulated as follows:

Skilled medical service is essential and in outpatient clinics we have the advantage over private practice that men who are especially skilled in dealing with gonorrhea and syphilis can take charge of the service, while men of less special experience can work under them and profit thereby. Organizing medical service is a gain, both to the skilled men, who see more patients, and more selected patients, and to the men of less skill, who have an opportunity to learn.

Second, the equipment for diagnosis and treatment: Here the clinic gains over private practice on the economic side, because in a single clinic equipment can be used for many patients which would otherwise have to be duplicated in many private offices with proportionate increase of expense. Pooling equipment is a great saving.

The organization of the clinic in its medical and executive staff is essential to secure the best results for the prompt and careful handling of patients and for the keeping of accurate records. The possibility of relating the clinic to external agents, such as the board of health, has been shown by Dr. Warner of Lakeside Hospital, Cleveland. At the same institution, and at the Boston Dispensary, the Massachusetts General Hospital, and elsewhere, the relation of syphilis and gonorrhea to social agencies and medical-social workers, has been shown. Clinics must be *accessible* to the people who need them. Most syphilis clinics are in the morning or afternoon, although evening clinics have been established in New York, in New Orleans, and in Boston. Perhaps elsewhere there are evening clinics of which I do not know. But any plan for the utilization of clinics as public health measures must include evening clinics. It must also include clinics charging more than nominal fees, for there is no reason why patients who are self-supporting, who are working, should not pay for what they get, provided the fees are such that they can pay them.

At the Boston Dispensary the establishment of evening pay clinics treating syphilis and gonorrhea has been undertaken within the past year. The details of the service have been presented in papers before other societies and I shall not go into them except in a very brief way. An evening clinic for men having gonorrhea, established in March, 1914, treated during its first year 632 patients who paid 6,809 visits.

The fees charged have been 50 cents a visit, and prices for medicine somewhat above the cost of the materials. The medical staff has been salaried. The clinic financially has paid all expenses, including an estimated charge for lighting and heating. The income from the clinic was $4,936.34 and the expense $4,622.89. It may be mentioned that the economic facts show the cost of the drugs, bought at usual drug-store prices, would amount to $2 or $2.50 a week. The cost at the clinic to the patient paying 50 cents a visit and getting the same medicines is $2.25 a week. It may thus fairly be said that the clinic does not take money that would otherwise go to the medical profession. It would go instead to the drug stores. The evening syphilis clinic, where the same fee has been charged, and the medical staff salaried, was established at the end of July, 1914, and during the first nine months treated 116 patients, paying 449 visits. The income during the past six months has been $519 and the expense $313.55. It will be seen that this clinic was more than self-supporting, though if charges for rental and overhead supervision had been made the surplus would be much less. Yet, even so, the clinic would meet expenses. The amount of diagnostic and treatment work for gonorrhea and syphilis is so large, the numbers to be reached are so vast, that unless such self-supporting clinics are established, the expense will probably be too heavy to enable these treatment facilities to be provided. Furthermore, it is better that patients should pay and come to a self-supporting clinic, than that the same patients should not pay and should regard themselves, and be regarded, as so-called objects of charity.[1]

A point of the first importance now arises. If clinics are to be developed as public health measures, clearly we cannot proceed on the same basis that we are accustomed to in most existing dispensaries. We cannot expect physicians to give their services. The medical service must be salaried. There is no reason why clinics with volunteer service, especially in connection with teaching institutions, may not continue, but clinics established as public health measures for the purpose of providing adequate treatment for 100 per cent. of the syphilis and gonorrhea patients in any community, must have salaried services. Such clinics would provide a substitute for the quack, and for self-treatment, and would bring under medical supervision great numbers of syphilis and gonorrea patients who now receive no medical care. Out of 200 visiting the evening genito-urinary clinic at the Boston Dispensary, thirty-eight had been treated by quacks and sixty-seven had had only self-treatment. Fifty-two and five-tenths per cent. of the total had had no previous medical attention of a reputable sort for the gonorrheal infection which brought them to the clinic. While these figures are not necessarily representative, they are very suggestive.

In the elaborate volume of testimony taken from experts by the British Royal Commission on Venereal Diseases last year, the need of a great enlargement of treatment facilities is brought out again and again and the increase of dispensary clinics is regarded as the chief means whereby this result may be attained. Incidentally, evening clinics are mentioned by many witnesses at no less than seventeen different places in the volume of testimony.

In establishing such clinics consideration must also be given to the provision of certain facilities at public expense. Salvarsan for syphilis, in infectious conditions, for people who cannot afford to pay for the drug, is a proper matter for public subsidy. Laboratory facilities for the diagnosis of syphilis and gonorrhea have already been provided in several states, in New York and doubtless in other cities, and is a proper subject for municipal or state departments of health or for city hospital laboratories. If we face the facts, if we recognize the enormous amount of syphilis and gonorrhea in the community, if we believe it to be a fact that the mass of these cases do not now receive adequate treatment, that most patients cannot afford adequate treatment, then we must turn to organized medical service in clinics as a resource to provide this treatment. The establishment of outpatient clinics on a large scale, administered as public health measures, for the diagnosis and treatment of syphilis and gonorrhea, is a practicable, necessary, and immediately desirable step in the campaign against these diseases.

1. In speaking of the conditions which clinics must meet in order to be efficient, I have gone beyond the useful standards announced by the Associated Out-Patient Clinics of New York. Their standards, however, relate primarily to technical equipment and much more is necessary in organization, follow-up systems, etc., if clinics are to reach a proper standard.

A STATISTICAL STUDY OF SYPHILIS

AS SEEN IN THE OUTPATIENT DEPARTMENT OF THE UNIVERSITY OF CALIFORNIA HOSPITAL *

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The following statistics are published for two reasons: First, the Wassermann reaction has so changed our views as to syphilis in the last few years that all statistics collected previous to its use are rendered of little value. Secondly, the present figures represent cases which have been perhaps unusually carefully studied with the possibility of syphilis in mind. This disease is more common in San Francisco than in many other American cities, and for this reason clinicians in this region are constantly on the lookout for it. There are probably few outpatient dispensaries where an equal proportion of the patients have been subjected to the Wassermann reaction. For several years the children's department has observed the rule of a routine Wassermann in each case; the nerve department has demanded the reaction for almost every case, and the medical department for over half. It has recently been decided for the medical department that thoroughness demands the routine Wassermann for each case. Other departments have used this reaction to a less degree, being consulted usually for a given local trouble, and not for the general condition. Any patient who seems to need general investigation, however, is sent for consultation to the medical rooms, the total number of such referred cases being large. For example, most eye patients with conditions other than refractive errors are given the benefit of a systematic examination. The result is that these figures may be taken to represent unusually closely the actual incidence of syphilis among patients in this locality.

The question naturally arises how far these statistics represent average American conditions. San Francisco has long carried the reputation of having an unusually large amount of venereal disease in compari-

* From the University of California Medical School, with the aid of a grant from the George Williams Hooper Foundation for Medical Research.

son with the American average, and this is doubtless true. At the same time we believe that clinicians here are rather more likely to suspect syphilis in every case than are those of some other places, and therefore succeed in demonstrating a larger proportion of the cases which exist. An indication of this appears statistically. For example, over 20 per cent. of our syphilis cases are found to have bone and joint lesions which we believe to be due to the spirochete. The contrast is striking when examination of the annual reports of a number of other clinics fails to reveal any, where the incidence of bone and joint syphilis is not insignificant as compared with the total number of diagnoses of syphilis. The assumption of less syphilis in other communities would not explain so gross a difference in the proportions of its various manifestations.

The diagnosis of skin lesions of syphilis is easy, and such cases are generally recognized, but it is the prime purpose of the following report to show, for a mixed clinic, what a large proportion of the patients with syphilis exhibit their disease in manifestations which we believe often go unrecognized.

It may be added that each of the 7,885 case histories on which this report is based has been reexamined to

TABLE 1.—CASES OF SYPHILIS SEEN IN VARIOUS DEPARTMENTS OF THE OUTPATIENT DEPARTMENT FROM JULY 1, 1912, TO MAY 1, 1914

Department	Cases of Syphilis	Total New Cases	Percentage of Syphilis Cases to Whole Number, per Cent.
Whole O. P. D.*	544	7,885	6.9
Nerve	82	363	22.6
Medical	370	1,695	21.8
Skin	134	892	15.0
Orthopedic	90	652	13.8
Genito-urinary	57	434	12.9
Eye	121	1,421	8.5
Throat, Nose, Ear	53	1,597	3.3
Children	26	890	2.9
Women's Clinic	21	915	2.3
Surgical	28	1,262	2.2

* The numbers for the various departments added together are, of course, greater than the total number of the whole outpatient department, because many patients visited more than one department.

be sure that the diagnosis was properly founded and that every positive case was recorded. In Table 2 the figures for diagnoses are given as they stand in the card catalogue, including of course some cases in which the diagnosis was not actually proved, but in the more accurate analysis of Table 3 the facts are given in outline on which the diagnosis was based. For this reason the totals of cases as given in Tables 2 and 3 do not agree in all details, though the divergence is nowhere great.

Little need be said to explain the facts as they appear in the tables. Table 1 gives for the whole outpatient department and for each of its divisions the proportion of cases in which syphilis was diagnosed to the total of new cases seen. The nerve department leads, as might have been expected, with a proportion of 22.9 per cent., and the medical is a close second with 21.8 per cent. The surgical department is last with 2.2 per cent., partly explainable by the fact already mentioned that in most cases the matter of syphilis was not investigated. The percentage for the whole outpatient department is 6.9 per cent.

Table 2 gives the diagnoses from the card catalogue of the various conditions interpreted as syphilitic. The table is inaccurate in one particular, namely, that the figures for skin lesions are too low. It sometimes happened that a roseola or other lesser eruption failed to be mentioned in cases with other manifestations, such as iritis, etc. An unusually high percentage of extragenital primaries is shown (eight out of thirty-one), but the total number is too small to warrant any conclusion except that it may have been due to chance.

TABLE 2.—DIAGNOSES OF SYPHILITIC LESIONS AMONG 544 CASES OF SYPHILIS*

Diagnosis	Number of Cases	Proportion to Total Cases of Syphilis, per Cent.
"Syphilis," not localized, or localization not given	191	35.1
Aorta: Aneurysm	8	
Aortitis	5	
Arteriosclerosis	3	
Heart: Myocarditis and myocardial insufficiency	14	
Aortic insufficiency	5	
Aortic and mitral insufficiency	1	
Total circulatory conditions	36	6.6
Bones: Gumma	1	
Osteomyelitis	10	
Periostitis	19	
Joints: Arthritis, infectious type, including destructive lesions	...	
General or multiple	9	
Elbow	3	
Finger	1	
Hip	8	
Knee	3	
Spine	41	
Arthritis, toxic type	18	
Total bone and joint conditions	113	20.8
Eye: Choroiditis and chorioretinitis	17	
Iridocyclitis	26	
Keratitis	14	
Nerve atrophy	21	
Neuritis and papillitis	6	
Ophthalmoplegia	7	
Retinitis	12	
Scleritis	3	
Total eye conditions	106	19.5
Nervous system: Cerebrospinal syphilis	44	
Tabes dorsalis	29	
General paralysis	4	
Total nerve conditions	77	14.1
Skin: Alopecia	1	
Gumma	9	
Macular, papular, pigmentary, etc.	47	
Ulcer	5	
Primary	23	
Extragenital	8	
Total skin conditions	93	17.1
Ear, internal	5	
Larynx	5	
Lip	1	
Liver	1	
Lung	2	
Lymph nodes	1	
Mouth	3	
Nose	12	
Pharynx	3	
Parotid	1	
Tongue	7	
Tonsils	1	
Testis	1	

* The totals are greater than 544 because many patients had multiple lesions.

Table 3 is the result of the selection and study of all histories with a given diagnosis, in order to make out in how many of the cases with this lesion syphilis seemed to be a causative factor. The conditions selected for this study were ones generally known to be the result of syphilis, or ones in which our experience seemed to point to a relationship not universally recognized.

The cases are arranged in four classes according to the evidence in favor of a syphilitic basis: positive, doubtfully positive, doubtfully negative, and negative (including presumably negative; that is, cases in which nothing suggested syphilis, but in which the disease had not been definitely excluded). The data on which the diagnoses were based is also indicated in brief. Considerable conservatism has been employed in list-

ing cases in these groups, a case being considered doubtful unless the proof was pretty conclusive. Thus, among the doubtfully positive and doubtfully negative cases are listed many old cases treated for long periods as syphilitic, but without Wassermanns, or with negative reaction.

In certain cases the point might well be raised that the coexistence of syphilis with a certain condition does not necessarily prove that the lesion itself is syphilitic. That question cannot here be considered for each group in detail, to the extent of giving pathologic data or notes as to the behavior of the lesions under antisyphilitic treatment. To apply a purely statistical method, however, it is evident that if syphilis is found present in a group of cases in far greater proportion than would be found in a similar group of normal persons, or of patients in general, the presumption is very strong that there is a causal relationship. For example, about 7 per cent. of our patients have syphilis; it must be more than a coincidence that 35 per cent. of our lesions of the aortic valve, and 28 per cent. of our arthritis cases of the infectious type occurred in patients known to be syphilitic.

Several remarks may be made with reference to separate items in this table. The high percentage of syphilis as the cause of aortitis and aneurysm is well

TABLE 3.—PROPORTION OF CASES WITH GIVEN DIAGNOSES FOUND TO HAVE SYPHILIS

Diagnosis	Total Cases	Positive		Doubtfully Positive		Doubtfully Negative		Negative		Percentage of Positive and Doubtfully Positive Cases to Whole Number, %
		No.	Remarks*	No.	Remarks*	No.	Remarks*	No.	Remarks*	
Aorta: Aneurysm	11	7	5 W+ 1 W— H+ 1 W— H—†	1	W— H+?†	3	3 W— H—	0		72.7
Aortitis	5	3	1 W+ 1 W— H+ 1 W— H—†	2	2 W— H+?	0		0		100
Dilatation	4	0		2	1 W± 1 W— H+?†	2	1 W— H—† 1 W— H+?	0		50
Arteriosclerosis	55	12	7 W+ 3 W— H+ 2 No W H+	5	2 W± 2 W—† 1 No W†	7	3 W—† 2 No W H+?† 2 No W†	31	13 W— 18 No W	30.9
Heart: Myocarditis	41	11	9 W+ 1 W±† 1 W— H+	3	1 W± 2 No W†	6	1 W± 5 No W†	19	13 W— 6 No W	34.1
Disorders of heart beat	22	4	2 W+ 2 W— H+	2	1 W— H+? 1 No W†	3	3 No W†	13	8 W— 5 No W	27.3
Aortic valvular lesions	20	7	5 W+ 1 W± H+ 1 W— H+	0		0		13	9 W— 4 No W	35.0
Mitral lesions	71	5	3 W+ 1 W± H+ 1 No W H+	2	1 W±† 1 No W†	2	1 W±† 1 No W†	62	28 W— 34 No W	9.8
Eye: Iritis	49	21	14 W+ 3 No W H+ 2 W— Lu+ 2 No W†	4	3 W—† 1 No W†	8	1 W—† 7 No W	16	8 W— 8 No W‡	51.0
Keratitis	27	14	11 W+ 2 W— H+ 1 No W	0		5	5 No W	8	2 W— 4 No W‡ 2 No W	51.9
Scleritis	11	3	2 W+ 1 W— H+	0		0		8	4 W—	27.3
Retinitis	43	11	8 W+ 3 W— H+	1	No W†	8	2 W—† 6 No W†	23	15 W—	27.9
Neuritis, papillitis	14	6	5 W+ 1 W— H+	0		2	No W†	6	6 W—	42.8
Nerve atrophy	30	16	7 W+ 3 W— H+ 2 W— Tabes 4 No W H+	2	1 W—† 1 No W†	10	2 W—† 8 No W†	2	2 W—	60.0
Choroiditis, Chorioretinitis	26	14	11 W+ 2 W— H+ 1 No W H+	3	1 W± 1 W— H+? 1 W—†	3	No W	6	5 W— 1 myopia	61.4
Ophthalmoplegia	13	7	7 W+	0		2	1 W— H+? 1 W—†	4	3 W—	53.8
Bones: Osteomyelitis	36	7	6 W+ 1 No W H+	5	1 W— H+ 4 No W†	3	No W	21	4 W— 13‡	33.3
Periostitis	33	16	16 W+	4	4 No W†	5	3 W—† 2 No W†	8	4 W— 4 No W‡	48.5
Joints: Arthritis, infectious type	236	56	42 W+ 2 W±† 10 W— H+ 2 No W†	10	2 W—† 8 No W (old cases)	21	2 W—† 1 W± 18 No W†	149	80 Tbc. 22 Gonorrh. 34 Ac. infections 4 Rheum. fev.	27.9
Arthritis, toxic type	169	12	12 W+	2	1 W± 1 No W H+	3	2 W± 1 W—†	152	58 W— 94 No W	8.2

* Under the head of "remarks" W+ means Wassermann positive, and the number before it gives the number of cases with this finding. W— means Wassermann negative, W± means Wassermann doubtful or suggestive, and No W means Wassermann not made. H+ is history of syphilis definite. H— No history. H+? History doubtful. † Other lesions present make diagnosis of syphilis probable or possible, or in some cases positive diagnosis made on the character of the lesion in question. ‡ Traumatic lesions.

recognized. The proportion among heart cases is, however, probably considerably higher in San Francisco than in many other places, not only because of the presumed greater frequency of syphilis, but also because rheumatic fever is comparatively a rare disease in this region, a fact which I do not remember seeing in print, but commonly accepted here by the best observers.

The high incidence of syphilis as a cause of eye lesions is in accordance with experience elsewhere, but is a fact not well enough recognized by ophthalmologists — at least not to the extent of their demanding routine Wassermanns in every case of the lesions mentioned below.

The most striking statistical fact here brought out (shown in both Tables 2 and 3) is undoubtedly the large number of joint lesions giving positive Wassermanns, and in our opinion due to the spirochete. This matter has been the subject of a special study by Dr. W. I. Baldwin and me[1] to which reference is made for further discussion.

In connection with certain of the cases of periostitis and osteomyelitis a statement should be made, which also applies to other conditions, such as iritis and keratitis, namely, that a history of trauma by no means rules out the possibility of syphilis. In one very stubborn case of osteomyelitis following a bullet wound the patient was later found to have a positive Wassermann, and promptly recovered under appropriate treatment. Discovery of a syphilitic condition was made in a number of eye cases in which the lesion at first was thought to be evidently on a traumatic or other obvious basis.

CONCLUSIONS

If these figures convey nothing else, they should emphasize the value and necessity of the routine Wassermann examination. For all hospitals this ought to be done on all medical, nerve, and obstetrical cases at least. Where such lavish use of the reaction is not possible, the indications for it should, at any rate, be very broad. Patients who admit a previous syphilis, or who show strong evidence of its presence, and who will probably be given antisyphilitic treatment in any case, need the testimony of the Wassermann, if anything, less than patients who do not otherwise suggest syphilis than by having a disease which may be due to syphilis, but need not necessarily be so. Large numbers of cases could be cited in which the diagnosis has been cleared up by the routine Wassermann in the absence of any suspicion; this has often occurred after long periods of failure to improve on other treatment. We feel that any obscure case of any kind ought to have a Wassermann. This is especially true in cases in which the patient's complaints seem out of proportion to physical findings—in cases in which the diagnosis of neurasthenia is too often satisfactory to the physician.

Of the classes of disease in which the Wassermann seems especially called for, may be mentioned all diseases of the central nervous system, all circulatory diseases, including cardiorenal and renal, all bone and joint diseases, all diseases of the eye involving nerve, retina, choroid, sclera, iris, or lens, all liver diseases, all chronic digestive diseases, all tumors, all cases involving lymphatic enlargement, and all constitutional or metabolism diseases.

1. Whitney, J. L., and Baldwin, W. I.: Syphilis of the Spine; Its Frequency and the Value of Its Characteristic Lesions as a Diagnostic Sign of Syphilis, THE JOURNAL A. M. A., this issue, p. 1989.

SYPHILIS OF THE SPINE

ITS FREQUENCY AND THE VALUE OF ITS CHARACTERISTIC LESIONS AS A DIAGNOSTIC SIGN OF SYPHILIS *

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There is a general belief that syphilis of the joints is a rare disease. This is the more remarkable inasmuch as the various forms of syphilitic arthritis have been clearly enough described, not only in separate papers, but in textbooks as well. For example, Goldthwaite, Painter and Osgood[1] include in their textbook an accurate description of the various lesions which may occur, and give references to literature, but add, as to frequency, that "there are great differences of opinion," and state of the toxic form (type of arthritis deformans): "This must be rare, we believe, in this country." On the other hand, many observers have believed that the incidence of joint lesions is high, especially in hereditary cases. Von Hippel asserts an incidence of 56 per cent., and Fournier of 40 per cent. O'Reilly[2] contends that this disease is much commoner than is usually supposed.

With regard to the frequency of syphilitic joint lesions in general, we shall here only refer to the paper by one of us (Whitney[3]) in which it was shown that among 544 syphilitics studied in the University of California Hospital, the diagnosis of syphilitic joint lesions was made in 83, or 15.2 per cent. These joint cases are listed in Table 1.

TABLE 1.—SYPHILITIC JOINT LESIONS AMONG 544 CASES OF SYPHILIS

Infectious type (including both synovitis and destructive lesions):	
General or multiple	9
Elbow	3
Finger	1
Hip	8
Knee	3
Spine	41
Toxic type	18

It was further found that of all cases of arthritis seen, 18.7 per cent. gave evidence of being syphilitic Of the infectious type of arthritis 27.9 per cent. were syphilitic, and of the toxic type 8.2 per cent. These figures are striking, and show that syphilitic joints are much commoner than is generally supposed. Even of the arthritis deformans type, syphilis seems to be a causative factor in a very considerable number.

It will be noticed that among the joints involved, the spine is by far the commonest. If the incidentally discovered abnormalities of the spine had been included, which were not considered important enough to be mentioned as a separate diagnosis, the figures would have been far more striking.

We have for some years in the University Hospital recognized as extremely common, and very characteristic, certain lesions of the spine found in syphilitics.

* From the University of California Medical School, with the aid of a grant from the George Williams Hooper Foundation for Medical Research.

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Goldthwaite, Painter and Osgood: Diseases of the Bones and Joints, Boston, D. C. Heath & Co., 1909, p. 441.
2. O'Reilly: Am. Jour. Orthop. Surg., 1914, xi, 3.
3. Whitney, J. L.: Statistical Study of Syphilis as Seen in the Outpatient Department of the University of California Hospital, THE JOURNAL A. M. A., this issue, p. 1986.

For this view Dr. S. J. Hunkin of San Francisco is primarily responsible, who used to insist on this fact long before the Wassermann reaction gave him the confirmation needed to convince others.

The following study was undertaken to put our strong impressions into the definite form of figures. A series of 100 cases of syphilis was carefully examined for joint lesions, with special reference to the condition of the spine. The cases were those of patients who happened in, day by day, to the medical clinic, and the only selection was in choosing only proved syphilitics, and in rejecting four who, though showing, as we believed, the characteristic spinal lesions, presented also complicating factors (in one case a gonococcus urethritis, in one a rheumatic fever, and in two a history of trauma).

The results of this study were rather more striking than we had anticipated, for out of 100 cases were found only twenty-six with perfectly normal spines (Cases 1 to 26), while six more are classed as doubtful (Cases 27-32).[4] The remaining sixty-eight cases had spinal abnormalities of some kind, and of these all but four were of a type which we have learned to consider more or less characteristic of syphilis.

As to the nature of these arthritic lesions occurring in syphilis, we distinguish, as already indicated, the infectious and the toxic type. The latter form is of the nature of what is often called arthritis deformans, hypertrophic and villous lesions being present, and less often atrophic changes. Usually many joints are involved, the spine being among the commonest. In such a case the spine is more or less uniformly stiff, and the Roentgen ray will usually show the characteristic osteophytes of hypertrophic joint-disease.

Of the infectious type, two forms are easily distinguishable. One is destructive, presumably a gummatous formation in the vertebral body (in other joints at the epiphysis), leading to a picture which closely resembles tuberculosis, and which, we feel sure, is commonly diagnosticated as such.[5]

In this paper we shall not go into a detailed description of the toxic or of the gummatous varieties, since they have been accurately described by many observers.

The second form of the infectious type, however, seems to have escaped almost unnoticed, and deserves more careful consideration. This form consists in a synovitis without destructive change. As occurring not uncommonly in the knees of congenital cases, this lesion has been long recognized; but the main contention of the present paper is its commonness in other joints, especially those of the spine, and its occurrence in acquired syphilis as well as congenital.

In the spine this process attacks the synovia of the various spinal joints, leading at first to lessened motion from spasm, but as the acuteness of the process subsides, adhesions are usually formed which limit motion, and in many cases give complete fixation. As far as can be judged, these adhesions are permanent, and are entirely unaffected by antisyphilitic treatment. They may, however, be broken up by forcible manipulation, a measure which we have often advised when there was enough deformity to give a faulty posture with strain.

When stiffening occurs, either from spasm or from adhesions, there is likely to be a characteristic deformity which may suggest an early form of Pott's disease. This may be either a slight prominence of the spines, a flattened area, or even a shallow depression. The question of whether the deformity is to consist of a forward or a backward bowing is largely dependent on the natural curves at the area involved, and the consequent directions of strain. But the suggestion is here tentatively made that a second factor may be operative, namely, that the flexor spasm may predominate in case the process involves chiefly the intervertebral joints, and the extensor spasm where the articulations of the laminae are the main seat of trouble. The former would tend to produce a convexity, the latter a concavity of the spinal outline. Perhaps the most characteristic single type of deformity is a prolongation of the dorsal curve into the dorsolumbar region, where a concavity is normal, or a flattening at this level. It is also to be noted that deformity may be altogether absent until tests of mobility show an area of more or less complete fixation.

It appears that the spine offers ideal conditions for the formation of permanent adhesions, being composed of a series of joints which interplay and functionate in concert. In case one part of this complex is immobilized by spasm, its function can be completely taken over by neighboring parts, and the affected joints are thus allowed to remain fixed until the adhesions have become permanent. On the other hand, in such joints as the knee or wrist it is impossible to shift function in this way, and feeble adhesions from a low-grade process are almost inevitably broken down.

It is characteristic of this condition that only a limited number of vertebrae are involved as a rule, thus distinguishing this form of stiffness rather sharply from osteo-arthritic changes, which in general are likely to be pretty evenly distributed throughout the back. Reference to Table 2 will show that the stiffness frequently affects only three or four vertebrae, though the commoner occurrence is in from six to eight, and sometimes the whole dorsal region, or even the whole spine is affected. Thirty-six of the 100 cases have lesions rather strictly limited in extent (Cases 33-68); twenty-five have a distinct localization, and in addition a lesser or greater stiffness of the whole spine (Cases 69-93). The localized areas we believe to be always of the infectious type; the general stiffness may be a lesser grade of the same infectious process, or may represent a (toxic) osteo-arthritis of the spine on which is superimposed the infectious local process. Some of the cases (71, 81, 88, 92) have more or less well-marked osteo-arthritis or other joints to suggest that the spinal process is also toxic.

The active synovitis is a relatively early manifestation of the disease. Cases 35, 37, 45, 47 and 68 are examples of this early occurrence. On account, however, of the persistence of the adhesions which so frequently follow, the characteristic deformity and stiffness appear to remain throughout life. For this reason they are found in numerous cases in which the disease occurred years before, the Wassermann is negative, and there is every evidence that syphilis as an active disease is abolished. This fact adds to the value of these lesions in the diagnosis of syphilis,

4. It is suggestive that nineteen of these patients had had early treatment: in two cases indifferent, in seven considerable and in ten vigorous.

5. Closely allied to this group is the Charcot joint in tabes, which Eloesser of this city has duplicated experimentally by traumatizing a joint whose posterior nerve roots had been cut. We suspect that in some of these cases there may be, on occasion, an actual invasion by the *Spirochaeta pallida*, giving a mixed clinical picture, so that it is at times impossible to be sure whether the lesions are gummatous or purely neuropathic in character.

namely, that it is found in old syphilitics, when every other evidence of the disease may be lacking.

Pain is usually not a prominent symptom even in the early (active) cases, though we believe that a large part of the backache and "rheumatic pains" of secondary syphilis may be explained on this basis. As compared to tuberculosis, the pain on motion and the sensitiveness, as well as the consequent spasm, are not striking, even in case of destructive lesions. Roentgenograms of the spine in the synovial form are practically negative, showing no appreciable bony change in either early or late stages.

Fig. 1.—Case 90. Tabes. General spinal stiffness, most marked in upper dorsal region. Showing maximum hyperextension possible, also marked hypotonicity (see Fig. 2) which allows patient to put palms to the floor, and even to bend elbows, with knees kept straight.

There is one more striking characteristic of these cases. This is a frequently occurring hypotonicity of the ligaments and muscles of the uninvolved portions of the spine, and notably of the sacro-iliac joints and the hips. Out of thirty-six patients with sharply localized processes, but otherwise normal spines, eighteen could touch the floor with their fingers, keeping the knees straight (Cases 51-68). Of twenty-five patients with general as well as localized stiffness, eleven could do the same (Cases 83-93). Of seven patients with evenly distributed spinal stiffness, two could touch the floor (99 and 100). Not a few of these could put palms to the floor, and two or three could then bend their elbows, still with straight knees. The usual tests for sacro-iliac relaxation were invariably positive in these cases of hypotonus.

This hypotonicity was described years ago by Frenkel as a sign of tabes, and it will be observed that several of the present series which had the most marked hypotonus were cases of tabes or cerebrospinal syphilis. But this is by no means exclusively a characteristic of the cases with nerve syphilis. Instead of calling it with Frenkel a sign of tabes, we are inclined to call it a sign of syphilis, which is usually more marked in nerve cases. It is also to be remembered that a considerable degree of hypotonicity, to the extent, at least, of the ability to touch the floor easily, is by no means uncommon in normal people, and therefore cannot, when alone, be considered pathologic.

The characteristic thing is not the hypotonicity alone, but this combined with a stiff back, or with a back showing areas of restricted mobility. This combination of the two findings we have long regarded as almost sure proof of syphilis, and it is one of the points which we especially desire to emphasize in this paper, that in this we have a pathognomonic sign which is of quite as much interest to the general diagnostician as to the orthopedist. The abnormalities here described are easy to demonstrate, especially after a little practice, and we have long felt that the routine examination of the spine as a part of the general examination deserves more general adoption.

In addition to the series of cases of syphilis examined, it was felt that a series of negative controls was also called for. Twenty-five patients were examined, who were thought to be certainly nonsyphilitic, and the lesions which we consider characteristic were found in none of them. At the same time, it was recognized that it is more difficult to assemble a series of known normal patients than one of proved syphilitics. A certain number of cases had to be excluded from both series because syphilis could not be absolutely proved on the one hand, or definitely excluded on the other. Of these rejected cases, a certain number had localized stiffness with or without hypotonicity, but no single patient was encountered with this finding who did not also show some other suggestion of syphilis. The impression gained from our experience with this sign in the last several years is strong that the combination here described is at least rare in nonsyphilitic persons.

For the purposes of the present study we felt obliged to consider the Wassermann reaction as the deciding factor in the diagnosis of syphilis, cases being excluded from the positive series if the reaction was negative, unless the other evidence was indisputable. We feel no doubt, however, that we have thus excluded a considerable number of syphilitic cases. O'Reilly[2] agrees with Wysocki that the diagnosis of bone and joint syphilis must depend on the Wassermann test, and this represents the usual teaching. From this opinion we must strongly dissent. Apart from the results of treatment, we believe that a considerable number of cases of bone, and especially of joint, syphilis give a negative reaction. Thus, in the past year one of us (W. I. B.) has seen four cases of tibial osteoperiostitis with repeatedly negative Wassermann, which showed a

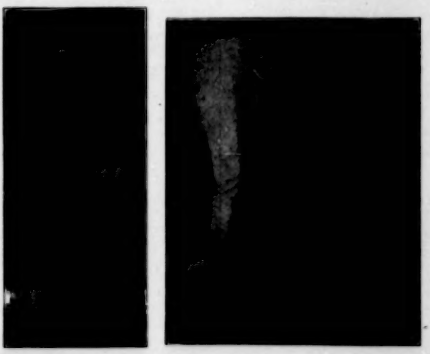

Fig. 3.—Case 66. Tabes. Marked stiffness ninth dorsal to first lumbar; fair mobility elsewhere. Showing maximum hyperextension and hypotonicity (Fig. 4).

TABE 2.—SUMMARY OF FINDINGS IN 100 SYPHILITICS

Case No.	Hospital No.	Sex*	Age	Spine†			Other Joints	Hypotonicity‡	Probable Duration	Early Treatment	Wass. Reaction§	Remarks
				Cervical	Dorsal	Lumbar						
1	2917	♀	22	0	0	0	0	0	12 yrs.	0	+	Keratitis.
2	3605	♂	33	0	0	0	0	0	8 yrs.	++	+	Treated at U. C. H. from start.
3	3567	♂	42	0	0	0	0	0	20 yrs.	0	+	Cerebrospinal syphilis.
4	1513	♂	32	0	0	0	0	0	11 yrs.	0	++	
5	670	♂	32	0	0	0	0	0	7 yrs.	++	+	
6	12464	♀	23	0	0	0	0	0	18 yrs.	0	++	
7	4721	♂	28	0	0	0	0	0	3 yrs.	++	++	
8	13308	♂	26	0	0	0	0	0	6 wks.	++	+++	Primary; treated at once.
9	8286	♂	38	0	0	0	0	0	7 yrs.	Little	+++	
10	14344	♂	28	0	0	0	0	0	3 mos.	+	+++	
11	13013	♂	44	0	0	0	0	0	18 yrs.	+	±	Undoubted history.
12	14035	♂	30	0	0	0	0	0	4 wks.	0	+++	Primary; untreated.
13	11497	♂	29	0	0	0	0	0	14 yrs.	+	+	Pills. Three years.
14	12866	♂	25	0	0	0	0	0	2 mos.	++	++	Vigorously treated since primary.
15	14091	♂	40	0	0	0	0	0	19 yrs.	+	++	Pills. Three years.
16	12118	♂	38	0	0	0	0	0	15 yrs.	+	+++	
17	6851	♂	21	0	0	0	0	0	2 mos.	++	+	
18	10006	♂	22	0	0	0	0	0	6 yrs.	0	None	Undoubted history.
19	11173	♀	33	0	0	0	0	0	12 yrs.	0	+++	
20	14670	♂	30	0	0	0	0	++	3 mos.	0	+++	
21	10508	♀	32	0	0	0	0	++	18 mos.	+	+++	
22	12583	♂	36	0	0	0	0	+	14 yrs.	+	−	General paralysis.
23	13981	♀	18	0	0	0	0	++	4 mos.	0	+++	
24	11139	♂	23	0	0	0	0	+++	3 yrs.	++	±	Treated at U. C. H. from start.
25	10038	♀	30	0	0	0	0	+	1½ yrs.	0	None	Syphilid.
26	10990	♂	46	0	0	0	0	+	27 yrs.	0	+++	
27	13228	♂	28	0	Sl. 8-9	0	0	0	6 yrs.	Little	+	
28	357	♂	36	0	Sl. 4-9	0	0	0	9 yrs.	++	+++	
29	10837	♂	15	0	Sl. 9-11	0	0	0	6 mos.	++	+++	Primary; treated vigorously.
30	11728	♀	21	0	Sl. 8-11	0	0	0	5 mos.	++	+++	Primary; treated vigorously.
31	967	♀	32	0	Sl. 7-12	0	0	0	3 yrs.	0	++	
32	604	♀	47	0	Sl. 2-6	0	0	+	2 yrs.+	0	+	
33	12222	♂	44	0	++ 8D-1L	(2-5) 0	0	0	8 yrs.	0	++	
34	13346	♀	54	0	++ 7-11	0	0	0	20 yrs.	0	None	Gumma of leg.
35	10981	♀	20	0	++ 7-12	0	0	0	6 mos.	0	+++	
36	9554	♂	25	0	+++ 9-11	0	0	0	8 yrs.	0	+++	
37	8513	♂	31	0	++ 5-10	0	0	0	1½ yrs.	+	+++	Salvarsan after primary; nothing since.
38	5115	♀	21	0	++ 3-10	0	0	0	3½ yrs.	0	+++	
39	1415	♂	12	Sl.	+ 3-7 + 12D-1L	(2-5) 0	+	0	Congenital	0	+	Old healed case. Formerly synovitis of knees and destructive lesion of spine. No evidence of activity at present.
40	7212	♂	36	0	++ 6-10	0	0	0	15 yrs.	0	−	Gummata of buttock; rapid healing after salvarsan.
41	2021	♂	56	0	+ 1-6 ++ 6-12	0	0	0	5 yrs.	Little	+++	
42	13184	♂	37	Sl.	Sl. 1-7 +++ 7D-1L + whole	(2-5) 0	Sl. hips	0	14 yrs.	0	++	
43	13411	♂	26	0	++ 2-7 ++ 8-12	0	0	0	9 yrs.	0	+	
44	9630	♂	66	(1-4) 0	++ 5C-3D 0 4-12	0	0	0	50 yrs.	0	None	Late syphilid; undoubted history.
45	14668	♂	19	0	+ 4-10	0	0	0	2 mos.	0	+++	Primary and roseola.
46	12560	♂	13	0	++ 7-8	0	0	0	Congenital	0	+++	
47	13665	♂	25	0	++ 3-11	0	0	0	3 mos.	0	None	Syphilid.
48	14181	♂	22	0	++ 5-10	0	0	0	5 yrs.	0	++	
49	13520	♀	28	0	+ 6-8	0	0	0	?	0	++	
50	2748	♂	50	0	+ 1-6 ++ 6-11	Sl.	0	0	4 yrs.	+	+	
51	10192	♀	41	0	+ 1-12	0	0	++	19 yrs.	0	+++	
52	5067	♂	34	0	Sl. 1-5 +++ 5-11	0	0	+	10 yrs.	0	+++	
53	15029	♂	64	0	++ 5-11	0	0	+	11 yrs.	+	+	
54	1250	♂	48	Sl.	++ 7-11	0	0	+	17 yrs.	+	+++	
55	11842	♂	41	0	+ 1-8 ++ 9-12	+ 1-5	0	++	15 yrs.	0	+++	Cerebrospinal syphilis.
56	12082	♂	29	0	+ whole ++ 6-10	0	0	+	5 yrs.	0	+++	
57	3916	♂	31	0	+ whole ++ 6-10	0	0	++	2 yrs.	++	+++	
58	6665	♂	34	0	++ 5-10	0	0	++	2 yrs.	++	None	Treated U. C. H. since primary.
59	2204	♂	31	0	++ 9-11	0	0	+	14 yrs.	Little	+	Tabes.
60	2403	♀	25	0	+ 1D-2L ++ 2-7D	(2-5) 0	0	+	6 yrs.	0	+++	
61	5227	♀	22	0	+++ 4-8	0	0	+	2 yrs.	0	+	
62	1338	♂	45	0	+++ 6-10	Sl.	Sl. hips	+	— yrs.	0	++	Cerebrospinal syphilis.
63	5674	♂	30	0	+ 7D-1L	(2-5) 0	0	+++	11 yrs.	0	++	Cerebrospinal syphilis.
64	14022	♀	27	0	+ 5-8	0	0	++	6 yrs.	0	+++	
65	3480	♀	37	0	+ 7-12	0	+	+	18 yrs.	0	+	Synovitis of knees and elbows.
66	13340	♂	45	0	++ 9D-1L	(2-5) 0	0	+++	16 yrs.	0	+++	Tabes.
67	8276	♀	48	0	++ 4-10	Sl.	0	+	30 yrs.	0	++	
68	11455	♀	26	0	+++ 4-8	0	0	++	15 mos.	0	+++	
69	11827	♀	36	Sl.	++ 1-12	+++ 12D-3L	0	0	14 yrs.	0	+++	Possible early tabes.
70	14971	♂	35	Sl.	++ 1-5 +++ 5-12	+	0	0	7 yrs.	+	−	Undoubted history.
71	3929	♂	49	Sl.	Sl. 1-6 +++ 6-11	+	+	0	13 yrs.	0	+++	Arthritis of almost all joints, most marked of hands.
72	13661	♂	58	0	++ 1-6 +++ 7-12	+	0	0	5 yrs.	Little	−	Undoubted history.
73	9758	♂	40	Sl.	+ 1-5 ++ 6-11	+	0	0	?	0	+	Gumma of clavicle.
74	5417	♂	12	Sl.	Sl. 1-6 ++ 7-12	+	0	0	?	0	++	
75	12572	♂	21	+	+ 1-5 ++ 5-11	++ 1-2 + 3-5	0	0	32 yrs.	Little	+++	Tabes.

* ♀ means female; ♂ means male.

† In these columns 0 means no abnormality found; + means demonstrable stiffness; ++ marked stiffness, and +++ rigidity at the level of the vertebrae whose numbers are given.

‡ In this column 0 means no abnormal hypotonicity; + means that patient could easily touch the floor with finger tips when knees were stiff; ++, patient could touch floor with knuckles; +++, still greater degree of hypotonicity.

§ The Wassermann report does not always represent condition at the time of this examination; sometimes it is taken from the record of a considerable time before.

TABLE 2.—SUMMARY OF FINDINGS IN 100 SYPHILITICS—Continued.

Case No.	Hospital No.	Sex*	Age	Spine†			Other Joints	Hypotonicity‡	Probable Duration	Early Treatment	Wass. Reaction§	Remarks
				Cervical	Dorsal	Lumbar						
76	9784	♂	46	Sl.	+ 1-4 ++ 5-9 + 10-12	Sl.	0	0	20 yrs.	Little	+++	Tabes.
77	5335	♂	34	Sl.	+ 1-6 +++ 7D-3L	+ 4-5	0	0	11 yrs.	0	+	
78	6577	♀	12	+	+++ 2-6 + 7-12	Sl.	+	0	Congenital	0	—	Roentgen ray shows rarefaction of sacrum and ilia, and destruction of head and neck of left femur.
79	10668	♂	30	++	+	+	0	0	?	0	+	Roentgen ray shows destruction of cervical vertebrae 3, 4 and 5.
80	14200	♂	23	Sl.	+ 5-12	+	0	0	?	0	+++	
81	1564	♀	60	Sl.	+ 1-5 ++ 5-11	+	+	0	— yrs.	0	++	Moderate general osteoarthritis.
82	13852	♂	50	Sl.	++ 1-12	+ 1-3 ++ 3-5	0	0	?	0	+++	Thoracic aneurysm.
83	13160	♀	39	0	+ 1-6 +++ 7-12	+	0	++	9 yrs.	0	+++	Insane.
84	12891	♂	32	+	+++ 1-12	+	0	++	16 yrs.	0	—	Tabes.
85	14644	♂	60	Sl.	+++ 3-10	Sl.	0	+	35 yrs.	++	+	
86	1591	♂	48	Sl.	Sl. 1-4 +++ 5-11	Sl.	0	+	20 yrs.	0	+	
87	87	♂	53	0	Sl. 1-4 ++ 5-10	Sl.	0	+	22 yrs.	+	+	Cerebrospinal syphilis.
88	2006	♂	64	+	++ 1-4 +++ 5-10	+11 D-5L	+	+	— yrs.	0	+	Hypertrophic changes, hips and fingers.
89	12502	♂	56	Sl.	+ 1-5 ++ 6-11	Sl.	0	+++	35 yrs.	0	—	Tabes.
90	6060	♂	56	+	++ 3-9 + 9-12	Sl.	0	+++	35 yrs.	+	+	Tabes.
91	8892	♂	40	Sl.	+ 1-4 ++ 5-11	Sl.	0	+	22 yrs.	0	+++	
92	13139	♂	62	+	+++ 1-9 + 10-12	0	+	+	37 yrs.	0	+	Hypertrophic changes in fingers.
93	784	♂	50	+	+ 1-5 ++ 6-12	+	0	++	15 yrs.	0	None	Tabes.
94	11828	♂	50	Sl. 1-5	++ 6C-2L	+ 3-5	Hips	0	23 yrs.	0	+++	Hypertrophic arthritis of hips.
95	1313	♂	28	+	++	++	0	0	16 yrs.	0	+++	Roentgen ray suggests gumma of fifth lumbar.
96	17	♂	55	0	+	Sl.	0	0	28 yrs.	+	—	Undoubted history.
97	13560	♂	37	++	+++	++	Sl. hips	0	13 yrs.	+	—	Flamboyant case of active synovitis—"poker spine."
98	12411	♀	43	+	++	+	0	0	?	0	+	Probably hypertrophic.
99	710	♂	47	+	+	+	Sl. hips	+	?	0	+	
100	7972	♂	51	+	++	Sl.	0	++	18 yrs.	0	+++	

typical clinical and Roentgen-ray picture of syphilis, and cleared rapidly on antisyphilitic treatment. We are sure, on the basis of many observations, that a not inconsiderable percentage of cases of spinal syphilis of the types here described will give a negative Wassermann. Therefore, as far, at least, as treatment is concerned, we are in the habit of paying attention to local and general findings even in the absence of a positive Wassermann. It is here that a general consultant can often be of great assistance to the orthopedic specialist, since the demonstration of any other suspicious signs amply justifies a course of specific treatment in doubtful cases. A brief summary of the findings in the 100 syphilitic patients is given in Table 2.

Recapitulation.—Among 100 unselected cases of syphilis were found:

Twenty-six patients with normal spines, of whom seven showed hypotonicity.

Six patients classed as doubtful, of whom one showed hypotonicity.

Thirty-six patients with sharply localized stiffness, but otherwise flexible spines, of whom eighteen showed hypotonicity.

Twenty-five patients with localized stiffness, and less marked general stiffness, of whom eleven showed hypotonicity.

Seven patients with uniformly stiff spines, of whom two showed hypotonicity.

Nine patients showing evidence of toxic arthritis in other joints.

Three patients with gumma of the spine.

One patient with destructive syphilis of the hip.

CONCLUSIONS

A localized stiffness of the spine is strongly suggestive of syphilis, being present in over half of this series, and rare in nonsyphilitic cases.

Localized stiffness of the spine in conjunction with hypotonicity of the uninvolved spine and the pelvic and hip joints is almost pathognomonic of syphilis.

It is found in obsolete as well as in active cases.

It is a sign easy to demonstrate.

A negative Wassermann reaction should not be interpreted as excluding syphilis in the presence of other signs which suggest joint syphilis.

University of California Hospital.

ABSTRACT OF DISCUSSION

DR. H. W. FRAUENTHAL, New York: In a paper I read before this section last year I made the statement that in my experience in examining orthopedic cases uniformly for syphilis, about 15 per cent. of them gave a positive Wassermann, either blood test or from spinal fluid. This has been borne out by other observers in France, Germany and Sweden. I simply want to refer to an interesting abstract of a paper in THE JOURNAL, June 19, 1915. The characteristic thing about spinal syphilis is the absence of deformity. The characteristics of Pott's disease are absent, while the Roentgen ray shows the increasing tissue, which is also characteristic of periostitis of the spine, and there is not the rarefied tissue from the absorption that occurs in tuberculosis of the spine (Pott's disease). I think there are a great many cases of tuberculous spines which are syphilitic, that is, a great many syphilitic spines and other joints which are treated as tuberculous; but in an institution in which uniform blood and spinal cord fluid tests are made, syphilitic joint disease is quite frequent. I think that if it were a uniform custom in orthopedic institutions to look for syphilis in supposed tuberculous joints, the positive Wassermann test would be obtained frequently. One of the most important things combined with this is the fact that the men who taught, twenty-five years ago, that syphilis and tuberculosis were antagonistic will find that this does not prevail. There is often a tuberculous infection on

a syphilitic base, and in order to cure the tuberculosis, it is necessary also to treat the syphilitic infection. I made this statement about ten years ago in a paper on syphilitic joint disease, before we had blood and serum determinations.

DR. JAMES L. WHITNEY, San Francisco: I had the pleasure of collaborating with Dr. Baldwin in the examination of the series of cases here reported, and should like to emphasize two points as seen by an internist rather than an orthopedic surgeon. The first is the value to both of cooperation between the specialist and the general diagnostician. Many patients are doubtless treated as tuberculous, who might, on the basis of a thorough general examination, be shown to be syphilitic. We have seen not a few such cases which, after long and fruitless mechanical treatment, yielded promptly to specific medication.

The second point is the possible value of the spinal condition as an aid in the diagnosis of syphilis in general. Diagnosticians are constantly on the lookout for signs which point toward syphilis. Of such signs I have found slight irregularities of the pupil especially valuable in directing suspicion toward syphilis. It seems to us, on the basis of this work, that the findings in the spine may prove to be equally valuable in this respect. Over half of our cases of syphilis have this localized stiffness of the spine, and over 30 per cent. have this stiffness combined with hypotonicity of spine and pelvis. The latter finding we believe to be found only in syphilitics, and even in the absence of other confirmatory evidence, including the Wassermann reaction, should be a sufficient basis for antisyphilitic treatment.

DR. D. B. PHEMISTER, Chicago: I should like to ask which portion of the spine shows the localized stiffness, and if Roentgen-ray examination shows bony changes in this region?

DR. CARL C. CRANE, San Francisco: A few years ago it occurred to me that there were many children in the clinics who were returning regularly for braces, splints and various other appliances in whom the diagnosis of tuberculosis had been made. They were not doing well; perhaps they were holding their own; they were pale, thin and inactive. They were given iodids and mercury, and within a fortnight a mother, nearly frantic, came in crying, saying that she could not make Johnny use his crutches any longer; that he was jumping on wagons and walking on his sore hip. The boy, with many others, improved very rapidly, became ruddy, strong and active, and shortly afterward dispensed with his crutches and all other apparatus. This was simply an example of what was observed in many instances of so-called tuberculosis, of the hip in particular, and of other portions of the skeleton in general.

DR. WALTER I. BALDWIN, San Francisco: In answer to Dr. Phemister's question, we have statistics of over 100 cases, collected mostly by Dr. Whitney, which show exactly the localization of the stiffness in the spine. I do not have time today to go into all the different phases of the diagnosis between syphilis and tuberculosis, but I have some lantern slides which illustrate this hip density with rigidity. I can say, however, that it is most common in the cervical region.

Sanitary Survey.—In a report submitted by the United States Public Health Service on a sanitary survey of ninety-six industries and trades in Indiana employing women labor, the following recommendations have been made: Ventilation should be improved by forcing fresh air into all parts of the work room; eye shades or suitable curtains should be used where operators are required to face windows continually, and individual drinking-cups and towels, and the providing of liquid soap were recommended.

SUBPERIOSTEAL RESECTION IN OSTEOMYELITIS

A CLINICAL AND EXPERIMENTAL STUDY *

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It has been known since the time of Galen that the removal of a part or all of the shaft of a bone, which has undergone necrosis in osteomyelitis, may be followed by restoration of the missing portion. Scultetus recorded a classic example in 1634, and a little later Delamatte and Vigarous reported regeneration of missing portions of the tibia. No attempt was made to explain the method of regeneration until after the well-known experiments of Duhamel in 1741, showing the important part played by the periosteum in the formation of callus during the healing of fractures. Subsequently it was attributed to the periosteum which, as was noted, was always detached from the shaft and left behind. Isolated reports of cases continued to confirm this view, but no experimental evidence was offered in its support until the important work of Heine, who from 1830 to 1837 performed, in animals, a number of subperiosteal resections of the various bones of the body, with subsequent regeneration of the shaft in a certain percentage of the cases.[1] Stimulated by this work, Langenbeck, who saw Heine's specimens, Larghi and other surgeons performed a number of subperiosteal resections of portions of diseased shaft, and of the ends of the bones in arthritis with varying degrees of success, as regards restoration of the excised portion.

Fig. 1.—Subperiosteal resection 65 days old, and bone of opposite side.

The experiments of Ollier[2] from 1858 to 1867 were the most extensive and important that have ever been made in the field of bone regeneration. He asserted that only the cells of the inner or cambium layer possess osteogenetic properties, and obtained restoration after complete and partial subperiosteal resections of differently shaped and constructed bones, as the scapula, long bones and bones of the face. When the entire length of a long bone was excised, regeneration of the shaft was fairly complete. The epiphyses were incomplete, but sometimes possessed separate centers of ossification, and were separated from the shaft by broad fibrous epiphyseal lines. Where epiphyses alone were subperiosteally resected, regeneration was usually complete.

The bones of the skull afforded a striking exception in that the pericranium and external surface of the dura mater were unable to restore anything beyond very small portions. Infection had different effects according to its extent. If severe, it usually prevented regeneration of the missing portion, but if mild, new

* From the Department of Surgery, Rush Medical College.
* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Loosen: Die Resection der Knochen und Gelenke, 1894.
2. Ollier, L.: Traité expérimental et clinical de la regen des os, Paris, 1867.

bone formation occurred, which was frequently exuberant, owing to the stimulating effects of the infection. Age played considerable part, regeneration being much less constant and extensive in old animals.

Ollier, Syme and others performed many operations on the basis of this work. Nichols[3] of Boston was the first to make a careful study of its clinical application and bring it before the profession in America, where it has since been perhaps more extensively used than in any other country.

Since the appearance of Macewen's work on the growth of bone, in which he asserted that the cambium layer of the periosteum has no osteogenetic function, there has been a great deal of controversy as to the origin of the new bone, not only in the healing of fractures and in bone transplants, but also in inflammatory processes and the restoration of their secondary bony defects. There is a great confusion of ideas as to just what happens. Some believe with Macewen that when a portion of the shaft is missing and the periosteum preserved, the regeneration is from an outward growth of the cells of the ends of the bone into the tube or groove formed by the periosteum, and from any small particles of bone cells which are separated from the shaft and cling to its inner surface. In other words, all of the regeneration is from bone cells. But McWilliams obtained regeneration from the periosteum after subperiosteal resection of entire ribs. Davis and Hunnicutt[4] conclude from their recent experiments that when bone is resected subperiosteally restoration of the defect is by outgrowth from the ends of the shaft, the periosteum acting as a limiting membrane; but if particles of bone are left behind or transplanted into the defect, the periosteum is stimulated by them and takes an active part in the formation of new bone. I believe that bone cells are of importance as a starting point for ossification of the fibrous or fibrocartilaginous callus formed by the proliferating inner layer of periosteum, but the periosteum may also form callus without the presence of bone, being sufficiently stimulated by the demand of the weakened part for bony support.

There is no uniformity of results after subperiosteal resection either in the healthy bones of animals or in diseased and healthy bones in man. The full explanation for this has not as yet been determined, but there are a number of known factors of importance, chief among which are age, the presence or absence of infection, and the technic of freeing from the bone the periosteum or involucrum which is left behind.

Fig. 2.—Subperiosteal resection of shaft 52 days old, and normal humerus.

Fig. 3.—Humerus excised subperiosteally in old dog, and regeneration after forty-six days.

EXPERIMENTAL RESULTS

Regeneration after subperiosteal resection was tested in animals in the following sets of experiments, in which the regions excised correspond to those most often removed in osteomyelitis. The periosteum was removed with a blunt instrument. It comes away from the shaft with ease, but is much more adherent about the ends where the deeper portions are frequently not detached, or chips of bone are removed with it. Separation through the epiphyseal lines was easily performed in very young dogs, but in older ones fragments of metaphyses were usually left behind because of the difficulty of division through the narrow and irregularly curved epiphyseal lines.

1. Subperiosteal resection of the shaft was done in young animals before closure of the epiphyseal lines. Nine operations were done, four on the tibia and six on the humerus. There was a good attempt at regeneration of the tibia in all the animals when they were killed. The youngest was 1 month old at the time of operation. In twenty-six days a small shaft had been restored which was composed of fibrocartilaginous callus with a number of areas of ossification along its course. In a six-months-old dog thirty-one days after resection, a similar regeneration had occurred. The new shaft consisted of a fibrocartilaginous flexible cord, largest toward the epiphyses, with numerous small areas of ossification along its course. These may have started from scattered remaining bone cells, but the columnar mass of callus which was ossifying was so large that it must have formed largely from the periosteum.

Figure 1 is of a specimen from a five-months-old dog sixty-five days after operation in which the entire shaft was removed, and no visible particles of bone were left between the two epiphyseal cartilages, although there may have been a few about the ends. The separate areas of ossification are much larger than in the preceding experiment, and many have already fused. Those remaining are separated from each other by narrow bands of fibrous or cartilaginous callus.

It seems incredible that one should doubt the participation of the periosteum in the formation of the largely ossified middle portion, which has no bony connection with either end, or to assume that this entire mass formed from bits of remaining bone cells too small to be detached at operation.

3. Nichols, E. H.: Acute, Subacute and Chronic Infectious Osteomyelitis: Its Pathology and Treatment, THE JOURNAL A. M. A., Feb. 13, 1904, p. 439.
4. Davis and Hunnicut: Am. Surg., 1915, lxi, 672.

One tibial resection in which extensive suppuration occurred showed at the end of twenty-eight days only a small amount of partly ossified callus near the upper end. The fibula in each experiment underwent marked compensatory hypertrophy.

Of the six experiments on the humerus, two were in pups 3 weeks old and were followed by the formation of a small irregular and shortened, largely ossified shaft at the end of thirty-five days. All visible traces of bony shaft were excised. In a 6-months-old animal, all of the shaft was removed except portions of the metaphyses at either end. At the end of fifty-two days there was a newly formed irregular shaft about one-fourth shorter but much greater in diameter than the normal humerus on the other side. (Fig. 2.) Separate centers of ossification are seen which have so fused that the bone is quite firm, thus enabling the animal to regain considerable use of the limb. In three other animals, forty, sixty-eight and eighty days after the resection in which portions of the metaphyses were left, there was marked shortening and little attempt at regeneration. Only a few spicules of new bone were present, with free mobility at the seat of resection.

Fig. 4 (Case 1). — Regeneration at end of three months.

It is difficult to explain the differences in results, as infection was either absent or very slight in all of the cases, and the periosteum was always removed in much the same manner. More osteogenetic tissue must have been left in the cases in which regeneration occurred.

2. Subperiosteal resection of the humeral shaft in five old dogs was followed by a failure of restoration of the shaft in every case. The experiments were 21, 39, 54, 65 and 78 days old, and in none was there new bone formation to any extent. The remaining ends came close together, markedly shortening the limbs, and in the oldest experiment were united by partly ossified callus.

3. Subperiosteal resection of an entire bone was performed in two instances. In a 4-weeks-old pup the entire tibia was removed with portions of periosteum about the lower end which were not separated. In twenty-seven days there was a large irregular, partly ossified, newly formed bone filling in the defect, except at the lower end where periosteum was removed. It had no separate epiphysis at the upper end. In an almost full-grown dog in which the humerus was examined after forty-six days, there was a flail limb with marked shortening and only a few nodules along the course of the excised bone (Fig. 3). Mild infection occurred, and a small pocket of pus was present when the limb was dissected.

4. Subperiosteal resection of the shaft with reimplantation of a support into the defect was performed for the purpose of determining the influence of the insert on osteogenesis of the surrounding sheath. When a live transplant was used, as previously demonstrated, there was new bone formation both from the transplant and from the periosteum, which soon anchors the transplant into its new position. In fifteen animals, the shaft of the bone (either tibia or humerus) was boiled and reimplanted, but in every instance there was more or less infection with fistula formation which either killed the animal or necessitated the removal of the too extensive implant in from one to three weeks. Boiled wooden pegs were substituted for the bone in seven cases, but always with resulting infection. Dissection always showed the insert free in a suppurating canal with a thickened wall which on microscopic examination consisted of necrotic inflammatory or granulation tissue without any traces of callus. Two animals in which the infection was less severe at the onset remained alive and were killed at the end of two months. The dead shaft was easily extracted in each case, and the surrounding infected periosteal layer had produced only a few small nodules of bone along its course. Evidently the infection destroys the remaining osteogenetic cells and consequently interferes with the regeneration. In one nearly full-grown animal, about one third of the boiled shaft of the humerus was split off and reimplanted. It healed in without infection in an oblique position with the upper end protruding beyond the epiphysis, and when the animal died at the end of a month there was a well-developed shaft formed about the implant and along the course of the periosteum. If it were not for the extent of the foreign body implanted, which so predisposes to infection, regeneration of the shaft might be hastened by the supporting action which is contributed.

A review of the gross and microscopic findings shows that after subperiosteal resection of the shaft in young animals, the tube of periosteum partly collapses, and is filled with a blood clot. The cambium layer of the periosteum, if removed, usually proliferates and forms an irregular column of callus along the course of the shaft. Proliferation also occurs from any particles of bone that were detached and from the fragments of metaphyses, if they are not entirely excised. Conversion of fibrous and cartilaginous callus into bone proceeds from the bony surface in the healing of fractures, and ossification of the callus, that is, transformation of its cells into bone cells, in these experiments, probably begins about small bits of attached bone; but this does not mean that all the mass of fibrous and cartilaginous cells originated from the bits of bone. Histologic study shows them to come from the periosteum, and the great bulk of them to be transformed into bone cells. It also appears that centers of ossification develop in this cartilage independent of fragments of bone, just as they do in the embryonal cartilage which preforms bone. Sections through some of these areas fail to show the presence of old bone.

Fig. 5 (Case 1). — Irregular new shaft with its cortex and medullary cavity at the end of two years.

In the light of all the confronting evidence, it is difficult to understand the contention that periosteum is only a limiting and osteoconducting membrane, and that its inner layer of unossified cells does not possess osteogenetic properties. Growth of bone from the ends was impossible in some of the experiments in which all of the shaft was removed, and the ends were limited by epiphyseal cartilage through which growth normally occurs from the shaft in the other direction, increasing the length of the bone by enchondral ossification. Also it could hardly be expected that a tube

of fascia lata containing a few bits of bone would give the same results if substituted for the remaining periosteum. Failure of regeneration occurred especially when the degree of infection was severe, as in cases in which the boiled shaft was implanted, owing to destruction of the remaining osteogenetic portions, and also in old animals in which less osteogenetic tissue is present about the periphery of the bone.

CLINICAL OBSERVATIONS

Clinical observations conform to a certain degree with the experimental results, although there is considerable difference between the resection of a shaft in a healthy dog and in human osteomyelitis. Subperiosteal resection of the noninfected shaft in young persons is followed by regeneration from the remaining periosteum and not by outgrowth from the ends of the bone.

Fig. 6 (Case 2).—Excised tibial shaft, showing necrotic portion.

CASE 1.—A girl of 10 had a cartilaginous exostosis of the upper end of the humerus for which a subperiosteal resection of 4 inches of the shaft to the epiphyseal line was performed. A strip of periosteum was removed laterally in the region of the tumor. Figure 4 shows the amount of regeneration at the end of three months. The irregular new shaft was formed from cells of the remaining periosteum, since its upper and lower ends differ little in size, and downward growth from bone at the upper end which was limited by cartilage was impossible.

Figure 5 shows the irregular new shaft with its cortex and medullary cavity at the end of two years.

Fig. 7 (Case 2).—Twenty-one days after subperiosteal resection.

Davison[5] reports a similar case in which 4 inches of the fibula which had been resected subperiosteally for use as a transplant was completely regenerated at the end of ten months.

In osteomyelitis, the inflammation, which usually starts in the end of the shaft, results in necrosis of trabeculae and pus formation in the medullary cavity, necrosis and penetration of a variable amount of the length and circumference of the cortex, and subperiosteal pus formation with more or less extensive separation of periosteum and perforation into the soft parts.

These destructive changes are soon accompanied by reparative processes. Proliferation occurs in the medullary cavity at the ends of the involved segment, and from any portions of marrow or cortex along its course which have not been killed by the infection. It also occurs along the surface from the periosteum and bone of the regions in which the cortex is not necrotic, and from some of the periosteum lifted up by the pus *after* it has perforated and escaped into the surrounding soft parts. More or less extensive areas of periosteum may be destroyed by the infection, in which case the underlying dead cortex is left without a covering. This encasing mass of osteogenetic tissue or involucrum is fibrous at first, but soon begins ossification in its deeper portion, in the region where it overlies living bone, and in two or three weeks its inner layer of spongy bone is demonstrable with the Roentgen ray.

In case the entire circumference of cortex is destroyed for a distance of from 2 to 4 inches, the surviving portions of periosteum nearly always form an involucrum about it, subsequent total defects after removal of the dead portion being unusual. Ossification of the newly formed involucrum proceeds rapidly from within outward, and is completed in from six to fifteen weeks, depending on the size of the bone and the duration of the acute inflammation. A little less time is required for sequestration of the necrotic portions.

Every case of osteomyelitis should be treated at the beginning by incision of soft parts down to the bone, and excision of a strip of the diseased cortex to establish drainage of the medullary canal.

After subsidence of the acute inflammation and the appearance of the involucrum, the method of getting rid of the necrotic bone must be decided on. In many mild cases, it is absorbed and no further operating is necessary. In others, the necrotic portion is definitely circumscribed and accessible, so that sequestrectomy is clearly indicated. Only in severer cases, in which the necrosis is extensive, does subperiosteal resection come into consideration. Its advantage is that, if regeneration is successful, the entire necrotic portion is removed, the occurrence of fistula and chronic bone abscess is avoided, and the disease is permanently healed as soon as restoration of the shaft is complete.

Fig. 8 (Case 2).—One hundred and twenty-three days after operation.

Its disadvantages are that (1) there is frequently a failure of regeneration of the shaft, leaving a defect to be treated by subsequent bone transplantation; (2) convalescence is much longer than in favorable cases of sequestrectomy, owing to the greater amount of time required for regeneration of the shaft; (3) when there is only one bone in the extremity, considerable shortening and curvature may be the result; (4) it cannot be used in late cases.

Failure of regeneration, while sometimes difficult to explain, is due chiefly to the fact that an insufficient amount of osteogenetic tissue is left, or to its destruction by the infection. Early removal of the shaft before the formation of the periosteal thickening and

5. Davison: Tr. Chicago Surg. Soc., 1915.

during the height of the infection is particularly apt to be followed by failure of regeneration.

The most favorable time to perform the resection is between the third and eighth weeks according to the case, after the infection has subsided and the soft involucrum has formed. It should be after ossification has started, but while the involucrum is pliable. As much as possible of its spongy, ossified portion should be removed by means of a sharp chisel, as it hypertrophies and aids in the ossification of the fibrous involucrum, similar to the action of the bone cells and chips along the periosteum in the subperiosteal resections in dogs. However, failure of regeneration after resection during this period is not seldom, as shown by the reports of Clopton and Nicholls.[6]

The following case illustrates the successful use of this method:

Case 2.—A girl, aged 3 years, had been sick for twenty-three days with an osteomyelitis, involving the entire length of the tibia, resulting in pus formation at either end, which was drained at the end of one week. There was still considerable discharge and a temperature of 102 F. A small amount of ossification was present in the periosteal thickening, which extended along the entire length of the shaft. An incision was made from one epiphysis to the other, and the thickened periosteum easily reflected anteromesially where an irregular strip of cortex was necrotic along the entire length of the shaft. Laterally and posteriorly, the involucrum was ossified over the living cortex and was separated with more difficulty. The shaft was sawed in two in the middle and the halves extracted. Drainage tubes were inserted at the ends, and the wound closed.

Fig. 9 (Case 3). — Excised portion of shaft.

The excised shaft (Fig. 6) shows the smooth, anterior necrotic portion which is separated from the living bone at its margins by a groove filled with granulation tissue. The living portion is covered by a thin layer of spongy involucrum, which was not all removed by the periosteotome. The medullary canal showed some pus along its course. There was considerable suppuration for a few days following the operation, after which improvement was rapid. Two small fistulas persisted at the upper and lower ends, which closed after curettage at the end of three months. Figures 7 and 8 show the amount of regeneration twenty-one and 123 days following the operation. The child has been walking on the limb since the fourth month, and recovery is complete without shortening at the end of two and three-fourths years.

Fig. 10 (Case 3).—Two years after excision.

If resection is attempted late after the involucrum is too thoroughly ossified, great difficulty will be encountered in removing the deeper portion of the periosteum from the roughened surface, and few unossified osteogenetic elements will be left. Consequently, there is very apt to be failure of regeneration, as illustrated by the following case.

Case 3.—A boy, aged 16 years, had osteomyelitis of the lower end of the fibula of nine weeks' standing, with abscess formation which had been opened and drained. At operation the large involucrum was found to be rough and ossified, so that it was difficult to remove much of the periosteal covering, which was gotten off as best possible by means of a periosteotome. About 6 inches of the shaft was removed down to the epiphyseal line (Fig. 9). The wound, which was drained, healed in four weeks with little discharge.

After one month the boy began using the limb, which has since remained well and strong. Figure 10 shows the condition at the end of two years, with a defect of the fibula about 4 inches in length. Fortunately, the malleolus is preserved, and it makes no difference to the patient.

The cause of the failure is easily determined when the excised specimen is examined. Its surface is very irregular and the involucrum is extensively ossified. Microscopic sections from the cortex show that while the periosteum in many places was left, in most places it was removed with the specimen. This was due, to some extent, to the irregularity of the surface; but by vigorous use of a sharp instrument, more osteogenetic tissue could have been left. However, it is a question if such a thin layer, which had already undergone extreme hypertrophy, could have formed a new shaft.

Verifying the results of animal experiments, osteomyelitis in adults is less suited for subperiosteal resection than in children.

Case 4.—A man, aged 45, had pneumonia which was followed by osteomyelitis of the tibia. Four months after the onset a surgeon removed subperiosteally two-thirds of the lower end of the bone, including the epiphysis. The wound had healed except for a small fistula when first seen at the end of nine months. Figure 11 shows the small amount of irregular new bone which had formed along the course of the periosteum. The late date (four months) at which the resection was performed, as well as the age of the individual, was responsible for the failure of regeneration.

In view of the clinical and experimental data now at hand, showing the frequent failure of regeneration, subperiosteal resection should be reserved for selected cases of osteomyelitis in which there is extensive necrosis of bone, and particularly when it is located in areas inaccessible to operation, as the posterior part of the tibia. Its use should be limited to parts of the body in which there is some other bony support, and should almost never be used where there is only one bone in the extremity, as later sequestrectomy gives better results in such cases.

The operation should not be performed too early while the infection is severe, and before a soft involucrum has formed, nor too late after the involucrum is so ossified that an insufficient amount of osteogenetic tissue is removed.

In case of failure of regeneration, the defect can best be repaired by free transplantation of bone, although a missing shaft of the tibia can be remedied by division of the fibula above and below and shifting it into the tibial defect, a method which was first used by Huntington.

122 South Michigan Avenue.

6. Clopton, M. B.: The Diagnosis and Treatment of Osteomyelitis, Surg., Gynec. and Obst., 1915, xx, 6.

ABSTRACT OF DISCUSSION

DR. THOMAS W. HUNTINGTON, San Francisco: With but a small personal experience, I do not seem to be in accord with prevailing opinions, as set forth by Dr. Phemister. In about 50 per cent. of the cases in which I have attempted subperiosteal resections in osteomyelitis my results have been unsatisfactory. The reason for this has been the presence of infection of more or less severity at the time of operation. In a single case I avoided this procedure by resorting to bone transference, substituting the fibula for the tibia. The case is in the literature, and the method has been followed by several other surgeons with uniform success. In my own case the result is ideal; the young man has grown to adult life and suffers no inconvenience whatever from his former trouble. One feature is of considerable interest, namely, that the transferred fibula, carrying with it its own nutrient artery and receiving an exaggerated nutrition from the remaining fragments of the tibia, hypertrophies rapidly and, ultimately, assumes the dimensions of the normal tibia. The absence of the shaft of the fibula seems not to lower the efficiency of the limb to any degree. At the time I made this effort I supposed that the idea was original, but on further search I find that an Italian surgeon, as early as 1860, resorted to an analogous procedure by transplanting the upper end of the fibula into the lower end of the femur. His result was altogether satisfactory.

DR. J. P. LORD, Omaha: In the discussion of Dr. Phemister the statement is made that severe infection will destroy the periosteum. That we grant, but it is my experience and observation that a great deal of this injury to the periosteum has been done by too rigorous treatment, for which the surgeon is responsible, namely, in the too vigorous use of the curet and the too thorough application of strong antiseptics. I will not amplify, but I wish that all the younger men would bear this in mind. I have caused damage myself in this respect. I am now more respectful of the tissues, and my later results are better. The other point I wish to make is that in some of these cases we should simply open the bone. When the medulla is reached, guarded use of the curet should be made. There are some who seem to disregard the endosteum and its functions, and its great power for assisting in the regeneration of bone. Another feature of the treatment which I wish to emphasize is this: Many surgeons continue to pack these cavities with gauze, and also dress these cases with undue frequency. Their patient will have a rise of temperature every time a dressing of this kind is changed. Sometimes I use gauze to control the hemorrhage for the first dressing, but after that (because of considerable experience with children) I minimize the severity of the treatments. Of course, I use the methods which you all use of enfolding the parts and minimizing the cavity. I use iodized petrolatum, 1:1,000, and I keep these troughs filled up with the petrolatum, and regeneration takes place under it and fills the cavity. You can actually do these dressings with a child smiling, and in a perfectly good humor. Now the parting shot I wish to make is a greater consideration for the regenerative power of the periosteum and endosteum, less surgery, and less vigorous treatment with antiseptics. I think that in simple drainage, and more regard for the tissues, we will better serve Nature in her efforts at repair.

DR. LEONARD W. ELY, San Francisco: The presence of a cambium layer of the periosteum I doubt, on the basis of a great many sections of normal and diseased bones. Instead of a cambium layer of periosteum, we find pockets of marrow here and there under the fibrous layer. These pockets of marrow are continuous by small channels in the bone with the marrow in the central canal. Here we get back to the bone-forming function of the marrow. We say that marrow forms bone, but marrow itself is not essential to the formation of bone any more than is an inner layer of periosteum. In studying embryonic bones, we find a cylinder of cartilage transformed into bone by blood vessels pushing into it, carrying their bone-forming cells, and transforming this cylinder of cartilage into bone. Embryonal bone contains no marrow, nor does cartilage that is being formed into bone. Again, in the epiphyses of bones we see bone forming, as it already has formed in the shaft. We see cartilage changing into the bone; but what changes it? There is no marrow there. If we make serial sections of the epiphyseal cartilage, we find from the periosteum, from the marrow, or from the synovial folds, that the vessels are pushing in to the center. When they reach the center, they begin to form bone. Bone is formed by osteoblasts. The osteoblasts are located, in adult life, in the marrow. We do not know an osteoblast by sight. We cannot identify any particular cell as an osteoblast. We say when we see a peculiar appearing cell in a certain locality, "That is an osteoblast"; but by itself we have no way of recognizing it, and we do not know whence it comes. Here is our problem to solve: What is an osteoblast and whence does it come? The osteoblast, whatever it is, manufactures bone out of one of two tissues, namely, cartilage or fibrous tissue. The osteoblast is the active agent. The cartilage or fibrous tissue is the plastic material out of which bone is made. In a fracture of a bone, these marrow cells, whatever they are, do not bridge the gap immediately and manufacture bone, but they manufacture it out of cartilage on the outside, and out of the fibrous tissue which is deposited by the periosteum between the two bone ends.

Fig. 11 (Case 4).—Small amount of irregular new bone along the course of the periosteum.

Macewen put a ring on the outside of a bone under the periosteum, and he finds that bone does not form over this ring. Periosteum, he says, has no bone-forming function; but it has a "bone-forming function." It cannot manufacture bone itself, but it is so much plastic material out of which bone is formed. When he separates it from the osteoblasts, which are located in the marrow, by putting a ring inside it, there is no bone formed on the outside of the ring, because the active bone-forming agent cannot get at the periosteum to manufacture bone. Stones do not build a wall. The mason builds the wall, but he must have stones with which to build it. The osteoblast is the mason.

DR. E. W. RYERSON, Chicago: It is impossible to say too much in commendation of the work Dr. Phemister has been doing to bring a little real knowledge out of the chaos in which all of our conceptions of osteomyelitis have heretofore been plunged. I do not know of any subject, except possibly the time-worn subject of the treatment of tuberculous abscesses, in which so many different things and practices have been current in the past. It is evident that to interfere with osteomyelitis successfully requires certain definite knowledge, which in the past we have not had. Dr. Phemister has been endeavoring to establish a time at which, for instance, a sequestrum should be removed, and a time at which a necrosed shaft should be removed. I have had three cases of successful regeneration of the entire tibia, after its complete removal in old osteomyelitis, and evidently I removed the shaft at exactly the right time. I have had a perfectly complete failure of regeneration in a tibia, where the entire shaft was removed, and it is evident that I removed it at the wrong time. We must study and we must learn a little more definitely the exact time at which to do this work.

About the treatment of acute and subacute osteomyelitis I want to endorse some of the things expressed by Dr. Lord. We must not be too radical with our treatment of osteomyelitis, of which we see so many examples. In the shaft of the tibia, for instance, it should not be too radically treated. An opening in the bone should be made practically the full

width of the tibia, the entire length of the infected area, and not a bit of curetting should be done, nor any antiseptic treatment, even though the medullary cavity be full of pus. Many of us have treated these cavities just as a dentist treats a cavity in a tooth, but that is not the proper way to do. The cavity in a tooth is an entirely and distinctly different entity from that of an osteomyelitic cavity in a long bone. We should simply drain, and drain by a method which is not ordinarily used. We do not sew up any of these incisions. Let them stay open, and do not put a dressing on them—do not put the dressing on the wound, but put the dressing around the wound, and let the entire wound stay open to the air without any dressing on it at all. When the pus fills it up, roll the leg over and let the pus run off into the dressings, and irrigate it with a little normal salt solution. Do not use any iodin or any other antiseptics. Let the patient stay with the leg stretched out on a chair all during the day, in the sun, with no protection whatever over the wound, except a coarse wire gauze protector. When treated in this way, these cases of osteomyelitis heal up almost magically, and I have been astounded to see the rapidity with which these large cavities fill up with bone in the relatively few cases in which I have used this method of treatment in the last six or eight months. It is easily the best thing I have seen yet, and I reiterate what Dr. Lord has said—do not do too much to your osteomyelitis cases. As to the proper time to remove sequestrums, we have not as yet been able to formulate any definite rule.

Dr. Roland Meisenbach, Buffalo: I have great respect for Dr. Phemister's work, as I have followed it for a number of years. However, I have also great respect for the endosteum when it comes to bone regeneration. I am not at all convinced that the periosteum proliferates enough to regenerate an entire bone. I believe that in many subperiosteal resections there remains some of the endosteum. I have been impressed with the rapidity of the regeneration of the endosteum on several occasions, and I believe that the endosteum proliferates three to one as against the periosteum. I base my opinion on my own observation in animal experimentation in which I have had occasion to section the cortex of the bone of a large number of animals and examine the sections microscopically. I have been impressed with the number of osteoblasts found in the region of the endosteum, and as the endosteum is so closely allied to the bone marrow, it is easy to see why there is a great regeneration at this point rather than at the periosteum. Since viewing the microscopic sections of cortical bone which Dr. Ely kindly demonstrated to us in the laboratory, I am more convinced than ever before that many of the theories of bone regeneration will require modification. I think the practical regeneration of bone is well shown in the cases of osteomyelitis in which most of the new bone comes from the endosteum and creeps along the sequestrum to meet some of the bone proliferated by the periosteum, thereby often forming an entirely new tibia. I think these cases were placed on record several years ago. In cases in which one has removed the gap in the long bone and in which one bridges over the periosteum, I believe that it is the endosteum that forms most of the new bone of the cortex rather than the periosteum. This brings out an important point, that in osteomyelitis one should not be too anxious to remove the sequestrum formed, because it often acts as a bridge for the newly developing bone. I think the stimulating effect of the staphylococcus on the endosteum accounts for the rapid regeneration in some of the cases, even those that are infected with staphylococcus. What I have said can be shown in sections. I have a series of sections with me which demonstrate the proliferation of bone in relation to the periosteum and endosteum, and make a good study. They have a direct practical bearing on bone-graft work, and if one keeps these in mind, one will know why certain cases do better than others.

Dr. Ethan H. Smith, San Francisco: In this class of cases I consider the bone curet a necessary instrument at times, but frequently more abused than any other bone instrument in use. Along with the uterine curet, I think that the bone curet is going to be soon curtailed in its use. In operating on these cases we should do a clean-cut operation, with sharp instruments and see what we are doing, and in removing the damaged tissue do it neatly and carefully, with as little bruising, abrasion or rubbing in of pus or débris in the raw surface as possible. I think that rough methods account for a great many disastrous results. The time at which an operation should be begun in osteomyelitis is a big factor in these cases. The doctrine still obtains that we are warned against interfering too soon in infections of bone and we were cautioned not to meddle with these cases until a sequestrum has separated from the sound bone. This change, recognized by old observers, depends on the virulence of each case. The remarks of Dr. Ryerson about the proper method of opening and draining these cases are particularly timely and good, and I endorse that idea exactly.

Dr. J. T. Rugh, Philadelphia: One point in regard to these grafts which are placed for deficiencies of various types is that the graft itself presents a certain degree of resistance and immunity toward infection. Various forms of infection influence the graft differently, that is, a graft will have a certain degree of immunity toward one type of infection while with another type it will break down and absorb rapidly. Further investigation and work along this line will show us a wider field of usefulness for the bone graft in the presence of infection and that we shall be able to utilize the graft as a stimulant to the proliferation of new bone in many cases in which some of the periosteum has been preserved, as in subperiosteal resection.

Dr. D. B. Phemister, Chicago: My conception of the composition of the shaft of a bone is as follows: It consists of a cortex of more or less compact bone in which are canals containing blood vessels and some connective tissue cells. Its medullary cavity is lined and filled by a loose connective tissue reticulum in which are contained the bone marrow or hemopoietic cells and fat in varying amounts, depending on the age and particular bone. This connective tissue reticulum is known as the endosteum. The bone is surrounded by a connective tissue covering which consists of an outer thicker portion of white fibrous tissue and of an inner layer along the bony surface, of loose richly cellular tissue. This covering is known as the periosteum and the inner layer, which is thickest during the period of growth, as the cambium layer of the periosteum. New bone growth and bone repair occur by the proliferation and ossification of the cells of these three portions, namely, the endosteum, the cells of the canals of the cortex and the cambium layer of the periosteum. They are known as osteogenetic tissues and their cells as osteoblasts. The bone cells, which are situated in lacunae and closely surrounded by an abundance of lime salts, do not multiply to any appreciable extent. To speak as Dr. Meisenbach does of that portion of the osteogenetic tissue lying outside of the medullary canal as endosteum is a misnomer.

I have tried to show in these experiments that the loose cellular layer lying on the bony surface and known as the cambium layer of the periosteum, if left behind in subperiosteal resections proliferates and plays an active part in the regeneration of the shaft. In osteomyelitis the cells of this layer as well as those of the canals of the living portion of the cortex proliferate and form an involucrum about the shaft which at first is soft, but which soon ossifies. In those cases in which a subperiosteal resection seems advisable it is best done not too early, while the infection is severe, and before the soft involucrum has formed; nor too late, after the involucrum has sufficiently ossified that it cannot be stripped away from the shaft. In either case there is apt to be too little osteogenetic tissue left to regenerate the shaft.

Visiting Nurses for Smaller Cities.—To say every city above 5,000 should have a visiting nurse does not imply that they are impracticable for smaller cities. There is no reason why with our new knowledge, the nurse should not supplant the old sanitary inspector, certainly the old time contagious inspector.—Pub. Health Com. Minnesota Pub. Health Assn.

NOTES FROM A GERMAN MILITARY HOSPITAL, WITH OBSERVATIONS ON GAS PHLEGMONS*

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SAN FRANCISCO

I arrived in Germany June 2, 1915. After three weeks spent in visiting hospitals and such of my former acquaintances and masters as were not at the front, I succeeded, through letters to the Surgeon General of the XIV Army Corps, in getting an assignment as surgeon to the Reserve Hospital at Ettlingen in Baden. The hospital occupies the buildings of a large new school for noncommissioned officers which were hurriedly completed at the beginning of the war and immediately turned over to the medical department. It contains from 1,020 to 1,100 beds and is well equipped. The local Red Cross, which was under contract to the military authorities to furnish supplies, was exceedingly liberal, equipping a small laboratory with microtome, etc., and granting all instruments and appliances asked for. There was not the slightest deficiency to be felt in any way; even articles that one would imagine to be scant during the blockade, such as absorbent cotton and rubber goods, were not stinted.

On first taking over the service, I found but few cases of surgical interest, the hospital having been used largely for infectious diseases; I had ten days in which to get things into running order for more active surgery, and July 3 we received our first large transport of 244 wounded. They came fresh from the front, some within twenty-four hours after injury.

The impression one gets of war surgery depends largely on one's position and the particular kind of warfare that is being waged at the source of one's material. We got almost all of our wounded from the west front where the troops have been almost entirely under artillery fire since the rapid movements of the first few months of the summer and fall of 1914. Consequently wounds from small arms were rare; most of them were caused by shells and shrapnel.

WOUNDS BY SMALL CALIBER BULLETS

Infantry and artillery fire make quite different kinds of surgery. A man hit by an infantry bullet either falls on the field, or, if brought to the hospital his condition is, as a rule, determined by the importance of the parts injured—he is out of danger or dies quickly. A man struck by a piece of shell is, unless the wound is entirely superficial, a source of anxiety and care for weeks and months to come. It is the accompanying infection or the lack of it that makes the difference.

There are exceptions to these general statements. The modern small caliber bullet by no means always makes a small, smooth wound. The nature of its path is determined partly by the character of the bullet and partly by the parts struck. Whether the bullets are pointed like the English, French and German bullets, or more snubbed like the Russian missiles, does not seem to make much difference as regards the character of the wounds. What does make a difference is whether the points are smooth, or whether they have been notched, dented, hollowed out or otherwise deformed—either by the soldiers themselves, who by nipping the points of their bullets with pliers, or notching them with a knife, can make a dumdum bullet out of regular ammunition, or by more concerted arrangement—for there certainly have been instances in which soldiers were captured with dumdum ammunition that bore the marks of having been machine-made in regular factories. A bullet with a nicked or hollow point no longer pierces; it rends and tears with explosive violence; the resistance at the point is such that the immense force pressing the greater hindermost bulk of the bullet forward causes its rear parts to burst from the casing, scattering the lead at angles to its original path and producing a small wound of entrance with a huge one of exit. Evidence of a dumdum bullet can only be gotten from the unspent bullet itself; the nature of the wounds can lead to a guess, but not to certainty. An ordinary bullet may become deformed by striking a twig or a metal button, or by being deflected by a stone or a wire fence and may act precisely like a dumdum; or it may shatter a bone and hurl the fragments aside and before it, and make havoc as great as any illegal projectile.

The shape of the bullet is again of importance, in so far as those having their center of gravity near the rear tend to turn in their course when the point meets resistance; they tend to turn broadside when they strike, or even ply butt-end foremost, or turn butt-end foremost inside the soft parts, leaving an irregular and destructive track.

Most of the warring powers encase their bullets in a steel or nickel-steel jacket. The French use copper and theirs is perhaps the most humane of the small ammunition. The copper jacket is tough, the bullets are usually little deformed, even when striking bone. One often finds the sharp point bent around like a hook, the bullet still remaining whole. The English bullet is perhaps the worst; the anterior third of its core is of aluminum, the remaining two-thirds of lead; it carries a deep groove toward the rear. It consequently tends to fly asunder at its two weak points, the junction of the aluminum and the lead, and the groove. Its center of gravity lies far back; this makes it prone to take a wavering or deflected course.

The nature of the wound depends not only on the bullet, but on the parts struck; if a bone is shattered with much force, each splinter acts as a projectile in itself and tears its own way through the soft parts. The cases in which a semifluid organ, such as the brain, or a viscus filled with fluid, the bladder or intestines, are struck with explosive effect, are of less interest. The men probably all die on the field.

HEAD INJURIES

Injuries to the skull are of three kinds—tangential, penetrating, and perforating. Most injuries in men arriving at the base hospitals are tangential. Men with penetrating or perforating wounds generally die before they get there. Tangential injuries are generally trephined at the field hospitals; the splinters of the internal lamina that the projectile has driven before it into the brain, and the blood clots, are removed. Although the wounds usually heal kindly, the patients are often permanently incapacitated, from organic or functional brain disturbances—hemiplegias, hemianopsias, deafness, and severe neuroses. Men with such

* Reported with permission of the Medical Department, XIV Army Corps.

perforating wounds who survive often reach base hospitals for final operation. It is wise to examine roentgenoscopically every fractured skull. One often finds surprises—bullets or deep indentations and splintering of the internal lamina where none were suspected. These skull cases should be watched a long time; they often develop late abscesses. These have made me desperate. They are frequently difficult to diagnose. The men may have a constantly normal temperature. Sometimes there are signs of pressure, and the heavy, stupid mentality and the drowsy stare may allow a guess at the condition. Sometimes the pus shows a round shadow in the Roentgen plate. This is of value. When one opens and drains the abscess one's troubles begin. The man may run a smooth and feverless course for weeks, the prolapse through the trephine opening, however, persisting; then comes a sudden high temperature, a progressive softening reaching far down into the ventricle, and death after one had congratulated oneself on having the man past danger. Meningitis has been favorably influenced by repeated lumbar puncture, and many recover under this treatment. Careful revision of the wound at the first operation and careful removal of all foreign bodies and splinters of bone, even at the cost of some additional trauma to the brain, might prevent some late abscesses. But this is more easily said than done. Carefully to revise a mangled and bleeding brain is usually a consummation devoutly desirable, but unattainable. We should do what we can, however; the brain seems to stand more after a fresh trauma than it does at later operations when we traverse inflamed and morbid gray matter.

For defects on the vault of the skull, the osteoplastic closure of Garré with a flap of bone shavings from the outer lamina and periosteum is sufficient. If there is danger of postoperative adhesions between the cortex and the bone, one can turn the flaps over so that the fascial side rests against the brain and the inner periosteal side with the bone-shavings looks outward. This form of closure makes a free transplant of bone unnecessary except where there is a deep defect in the forehead which looks badly unless filled out level with the surface. Here the graft may be taken from the rib in preference to the tibia; the bone of the rib is softer and if one splits it along one edge with a chisel, leaving a periosteal hinge along the other, one can trim it readily to any desired shape with a scissors. If the defect is deep, bits of muscle may be left adhering to the rib, or one may fill out the rest of the hole with fat from the subcutaneous tissue of the chest.

CHEST WOUNDS

Wounds of the chest do not give as little trouble as is popularly supposed. Ritter called attention to this at the Congress of Military Surgeons in Brussels. Shortness of breath and general weakness often last a long time, and the physical signs—lack of respiratory movement, shrunken chest, with several intercostal spaces tender to pressure and retracted, especially on inspiration, dulness, with impaired or wanting breath sounds and weak vocal fremitus — remain unchanged for months, even when aspiration gives no fluid. The hematothorax makes a thick pleura and in shrinking contracts the chest.

Bloody sputum is usually taken as a sure sign of a wounded lung. It is not necessarily so. One sees numerous men whose chest wall has not been perforated, but who have bloody sputum for several days after injury, and who show dulness and impaired breathing over parts of the thorax corresponding to the seat of the wound. If the upper part of the chest wall has been injured, we may find dulness and absent or weak breathing here alone, with the lower chest free, thus ruling out the presence of hemorrhage into the pleural cavity. These are tangential injuries of the chest with contusions of the lung, perhaps merely a local pulmonary congestion due to lack of respiratory movement in tender parts of the thoracic wall.

WOUNDS OF EXTREMITIES, NERVES, VESSELS

Gunshot wounds of the extremities have increased in gravity with the increased power of the modern small arm. *Injuries to the nerves and blood vessels* are more frequent. Nerves and vessels cannot evade the modern bullet. The extent of the injury depends, I think, much on the position of the member when struck. If an elbow is extended with the brachial vessels and the nerves on the stretch it seems reasonable that the bullet itself may make but a small lateral rent, but that the tenseness of the vessels and the sudden jerk of the muscles may complete the tear. If the elbow is bent, the nerves and vessels loose, the damage will not be nearly so great. It is not a question of nerves or vessels evading the bullet, it is a question of their damaging themselves by their own tension under its impact.

The path of the bullet is almost always surrounded by a large, hard and tender infiltrate. Sections show extensive hemorrhage and necrosis of the muscles. What causes the wide necrosis I do not know. The size of the intermuscular and intramuscular clot is often surprising, even where no visible larger vessel has been injured. It may be as big as a fist or the flat of the hand. In a few weeks the clot and the infiltrate shrink to a scar that crunches like bacon rind under the knife, and turns its edge, and in shrinking strangulates the nerves. Palsies begin to appear, particularly radial and peroneal ones, together with agonizing neuralgic pains that are referred to the peripherally innervated parts, the fingers, the hand or the foot. They are severest at night and wear the men out from lack of sleep. One finds atrophied muscles, partial reaction of degeneration, hypesthesias and paresthesias and a locally increased sweat secretion. At operation the nerve is seen to be unsevered, or partly so; the sheath, however, is 2 to 3 mm. thick, red or yellowish-brown, and hard, the scar and infiltrate reaching a hand's breadth or more beyond the path of the bullet. One should not content oneself with dissecting the nerve out of the scar, but should split the thickened sheath and dissect out the separate nerve-tracts according to Stoffel. If this is done thoroughly and carefully (it is not easy) the palsies usually disappear in a few days and the pains cease, these, however, less rapidly than the palsies, I have found.

FRACTURES

Fractures from the small caliber bullet, even where the bone is widely shattered, usually heal promptly, often with an exuberant callus, because of the amount of extravasated blood. I have been struck by several cases that resemble one at the San Francisco City and County Hospital of a burglar who had been shot in the leg and who, besides a comminution, showed a spiral fracture of the tibia that could not have been caused by any form of direct violence. One of these

men had a bullet wound of the thigh with a typical spiral fracture of the upper third, without any splintering of the bone; others had comminuted fractures where the bone had been struck by the projectile, and above this pure spiral fractures; or again, there was a comminution below and the upper fragment of the same break ended in a spiral, this being the most frequent. The twist must have been produced by indirect or muscular violence simultaneously with the shattering of the bone lower down, perhaps by the man's fall.

The question of *how to transport fracture patients* is still unsettled. A well-fitting plaster splint with windows for dressings is the best, but is often impossible. There is no time for applying plaster hip splints when the wounded pour in after a battle, several hundred at a time; often the men at the front are not trained in the application of plaster. We must remember that all sorts of medical men are there doing their best — young and old — dermatologists and ophthalmologists — all sorts of men, many of whom have not handled plaster since their student days. Splints as usually applied are more of a balm to the surgeon's conscience than use to the wounded. The number of suggestions for splints and dressings coming out in the journals every week make it evident that this problem has not yet been successfully solved.

WOUNDS BY ARTILLERY PROJECTILES

So much for wounds from small caliber bullets. I have put them in a class by themselves because they *are* a class by themselves. It is the *wounds from shells and artillery projectiles* that make one realize what war is—make one thank God that our country has been spared such scenes.

A man ought to put up with a great deal before inflicting such tortures on his fellow beings, even though he may not care about his own person. Genghis Khan, Tamerlane, the Malayan potentates, Nero, Eogel's old Cossack Tarass Bulba—whatever stands in our eyes for cruelty—had no such thoughts as these. Gouging out of eyes, the Philippine "water-cure," thumb-screws, the rack, these were matters of hours or a few days at most; but gas phlegmons and tetanus and hospital gangrene by which a man rots away for days and weeks in his own filth, where shattered bones stick out through green and quivering muscles, where pus and gangrene travel up by inches, and not even a kindly stupor comes to a man's aid, these have been reserved for modern humanity to inflict.

Not only small arm ammunition but shells have individual differences in structure. Shells seem to burst in three ways according to the steel used in them. Those used at the beginning of the war broke into large, more or less irregular polyhedral chunks, something like lumps of coal. The pieces were often very large, as large as a fist or larger; one sees them rarely now. Another kind also bursts into lumps, but the lumps are smaller and jagged and often full of little blow-holes, like lumps of coke. These are worse than the first kind in that they carry more dirt with them; rags of clothing, etc., bury themselves in the irregularities of the fragments and are caught and entangled by the sharp projections. The third kind, which are of our manufacture, I think (evidence of kindly good will), do not burst into lumps but into jagged slivers with saw edges, some straight, others curled. The small ones are often shaped like Indian arrowheads or flint knives. This is evidently a tougher kind of steel.

Besides the wounds from shells one finds shrapnel wounds, which occupy a position as regards infection midway between small arm ammunition and the shell, wounds from fragments of bombs and those from accidentally exploding percussion caps. The caps, which usually explode while being handled, cause mangling injuries with much tearing and laceration because of the nearness at which they act.

SHELL WOUNDS ALWAYS INFECTED

Every wound from a shell is infected. This may be taken as a rule without exception. The infection may not be severe and the wounds may occasionally heal without suppuration, just as bits of uniform (surely never sterile) often heal in a wound without suppuration. Generally, however, the infections are severe, and every one who has been here since the beginning of the war says that they are becoming graver and graver as the war goes on. Why, I do not know, except that the uniforms are becoming dirtier and dirtier I suppose, and the ground more and more impregnated with the products of decaying cadavers. Tetanus, which was frequent and severe at the beginning of the war, has practically disappeared since all wounded are given prophylactic injections of serum at the first dressing.

MUST BE TREATED ACTIVELY

The teachings of von Bergmann—the "Hands off"—so great a blessing for gunshot wounds, have been a bane to the treatment of artillery wounds. "Hands off!" "sterile dressings" and "splints" had been so drilled into students, had become so intuitive, that men forgot that there is a difference in wounds of battle—that a smooth shining bullet and a jagged piece of steel carrying dirt and stones, and bits of uniform and underclothing with it are not the same thing. It is only recently that there has been a general awakening to this fact. The mistake has been that artillery wounds have not been treated actively from the first—opened widely, all the nooks and crannies opened, and the dirt removed. These wounds are the most deceptive, and it was the more difficult to arouse field-surgeons to their importance because gas-phlegmons and gangrene do not begin to show from the first. There are usually two or three days of quiet, the wounds are reactionless and the fever which generally accompanies artillery injuries may disappear for a day or two after the first twelve hours. Then the inflammation breaks loose and the phlegmon runs wild. Men are kept a day or two in a field hospital, their condition does not seem to be precarious and they are transferred to the base, out of sight of the field surgeon by the time the phlegmon has really begun, so that his sins of omission may rarely come to his eyes.

GAS PHLEGMON

Gas phlegmons are of several kinds. They are better termed phlegmons than gangrene; the gangrene is not primary, but secondary. In the one kind the whole limb is immensely swollen and tender, dusky brownish-yellow, hard and tense as an inflated automobile tire, and tympanitic on percussion. The wound edges pout and show a dry muscle underneath, covered, perhaps, with a greenish fibrinous membrane; from the wound comes a little thin exudate with an ammoniacal, urinous smell. When incised the muscles burst from their sheaths like a tire from a casing, they crackle under the knife and one can squeeze gas

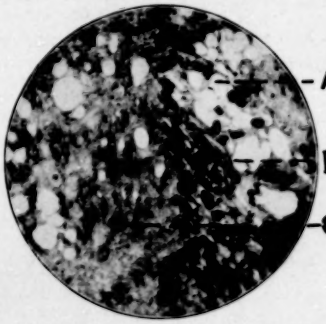
bubbles from them with the fingers as from an edematous lung. They are dusky in color, perhaps greenish; from between them, far up and down the limb runs a watery, stinking pus. The veins are engorged or stopped by black blood clots and steeped in the same thin pus. The outer wound, which may be no larger than a half dollar, shows astonishingly little of the awful destruction beneath it. In fresh cases it is usually easy to find and extract the foreign body; it falls into one's fingers without one's particularly looking for it. The gangrene usually comes later and is a consequence, I think, of the extensive venous thrombosis. If all goes well, the next day sees the muscles that were previously tense to bursting, soft and black but still full of gas; and on the day after, they begin to slough. A huge amount of sloughs comes from the wounds — green ones from the muscles and fascia mixed with bright ochre-colored pieces (what these are I do not know) and much foul pus. Once sloughing begins the wounds clean themselves rapidly; in a week or ten days they are usually covered with healthy granulations and the patient is feverless.

The second kind of phlegmon is more superficial and is characterized by a yellow gelatinous edema with which the subcutaneous tissue is soaked, especially around the veins, which are often thrombosed. Here there is a more extensive moist gangrene of the skin, but the deeper parts are less affected. After a day or two thick green pus takes the place of the yellow edema, and if one runs through the skin along the course of the veins with a pair of scissors one can follow the pus half the way, sometimes all the way, up the limb.

Gas phlegmons should be laid wide open, not incised and drained, but *opened*, so that all the affected parts lie bare and there is nowhere to place a drain. This should be done at one operation. It is often good to cut the muscles square across; the ends retract and leave the wound agape. One cannot make multiple small incisions and wait and follow the pus as it appears. It comes too quickly. The limb becomes gangrenous, or the man dies, or both, while we wait. In order to prevent the pus traveling up along the veins it is often well to cut the main subcutaneous ones across considerably above the wound; in a phlegmon of the leg, for instance, to cut and tie the saphena above the knee. In this way one will often find the perivenous edema high above the wound and cut its further course short. The scar blocks future thrombotic or lymphangitic extensions. In the subfascial phlegmons one should make long incisions along all the veins that are surrounded by pus, often half a dozen from the ankle to the knee. They heal kindly as the edema recedes, if strips of sound skin are left between them.

I have not been able to muster courage to do primary amputations and have lost surely one, perhaps two, men by waiting until the limb was evidently gangrenous. When amputating I have merely cut through the soft parts below the site of fracture leaving long flaps of skin and muscle and have not attempted to amputate in healthy tissue. Part of the flaps slough away, but enough usually remains to make a useful covering for the stump. It has not been necessary to amputate for phlegmons limited to the soft parts without fracture. The most virulent phlegmons are those of the lower extremity; those of the arm are as a rule less dangerous. One hears much talk among the men of "poisoned" ammunition; this is evidently a myth; the fact that the leg and the foot are most severely affected while severe phlegmons of the arm are rare, makes it plain that it is the dirt and dirty clothing accompanying the fragment of shell that produce the infection rather than the fragment itself. The coat of course is rarely as dirty as the trousers and drawers.

The after-care of phlegmons is one of the most difficult problems we have to meet. It is impossible to say when the infection is conquered. For months after the wounds are clean the men will suddenly have fever of obscure origin, develop erysipelas or have recurrences of septic inflammation. Any attempt at complicated plastics, any attempt at clean amputations with closure of the wound is followed by high septic fever, is a most risky thing, and is doomed to suppuration and failure, even long after the wounds are clean and the temperatures normal. One is desperate; the wounds must be brought to a close at some time; one does not know when. When reamputating it is best to disturb the granulations as little as possible, to make a simple straight longitudinal incision, cut off a sufficient length of protruding bone, and let the wound close by granulation, bringing the edges together considerably later with adhesive plaster, not with sutures.



Gas phlegmon of the muscle. A, gas bubbles; B, muscle fibers, mostly necrotic; C, blood clot and purulent infiltrate.

In some cases where one does not have to cut or otherwise disturb the granulating wound, the stumps may be covered by simple plastics, sliding down a bridge flap from the same extremity, or taking a pedicled flap from the other leg, or, in the case of the arm, from the chest. Bearing future difficulties in mind, one should try to save flaps long enough to cover the bone at the first operation — flaps long enough to accomplish closure after they have shrunk and are cleanly granulating and can be laid over the stump.

The late recurrences of fever and suppuration that we find occurring spontaneously or after the simplest operative intervention, are due, I think, to streptococci which have accompanied the gas bacillus in all of my cases, and not to the gas bacillus itself. The sepsis is a streptococcic sepsis in its clinical aspects. I have not been able to make blood cultures, but one case that showed thick gram-positive bacilli with central spores August 25, showed after death September 8, streptococci and staphylococci but no gas bacilli in cultures from the wounds, regional lymph glands and spleen.

PROVISION FOR THE CRIPPLED

September 5 the Ettlingen Hospital was converted into a purely orthopedic institution and run in con-

nection with a school for the one-armed, and an institute for the care and training of cripples. As the war goes on the number of orthopedic cases and cripples multiplies. Other wounded are cured or die, orthopedic cases and cripples remain. There are numerous hospitals for their care throughout Germany—models of wisdom and foresight in coping with the economic problems that will come after the war.

When it is apparent that a man is permanently incapacitated, he is transferred to his home hospital in order that he may get in touch with former employers and friends and look about for suitable work while undergoing hospital treatment. Manual training schools with special courses for cripples, and all kinds of educational opportunities are open to him, and wherever possible the endeavor is made, not to find him another occupation, but so to educate him in his former trade and elaborate his former stock of knowledge that he will be able to do with his brains what he previously had to do with his hands. Thus one-armed bricklayers and masons have been taught mechanical drawing and architecture and are earning more money with their one arm as builders and contractors and foremen than they did before the war with their two hands. This, of course, is not given to every man's talents and industry, but every conceivable contrivance and prosthetic appliance and tool are given the crippled so that they may earn a useful livelihood in spite of their disablement. The neurologic-orthopedic hospital in Mannheim, to which Stoffel is surgeon, is a model. While undergoing treatment and in the free intervals between orthopedic exercises, massage, etc., the men attend classes in bookkeeping, stenography, and other commercial studies; in cobbling, locksmithing and all sorts of trades; in bookbinding and other industrial arts.

Much depends on willingness to work; the certainty of a pension is a drawback in this respect, and I think it quite likely that some law may be found necessary after the war to keep cripples from idleness. There is much here that bears on our own compensation laws and that would be worth investigation.

Karlsruhe, Sept. 22, 1915.

Benefits of Applied Physiology.—The gains in human vitality which we can secure from applied physiology will, I believe, prove as surprising as those we are already securing from applied bacteriology. To this end we need to formulate scientifically what constitutes a wholesome life and to educate the people on what changes from existing customs are necessary to live that life. Furthermore, in the industrial world, we must in some cases compel wholesome mental and physical conditions for our working people. The time has come when science must subdue custom and reason triumph over tradition.—Prof. Irving Fisher in *American Journal of Public Health.*

TOTAL REMOVAL OF THE ORBIT UNDER LOCAL ANESTHESIA

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MOBILE, ALA.

Having occasion to perform total removal of the orbit in a nephritic woman 81 years old for a recurring suspected melanotic sarcoma I determined on the use of local anesthesia, feeling that the prognosis did not warrant any serious operative risk. Much to my surprise the literature failed to disclose even a case report of this operation performed under local anesthesia injection, although the literature is replete with local anesthesia methods for tenotomy and operations on the bulbus oculi. There are also frequent references to various methods for deep orbital blocking of the trigeminal nerve.

The remarkable facility with which I performed complete removal under local anesthesia without pain or risk to the patient urges me to present what I believe to be an original technic. I wish also to present my avulsion of the supra-orbital and infra-orbital nerves and the contents of the infra-orbital canal and the supra-orbital notch as an original addition to the usual operation.

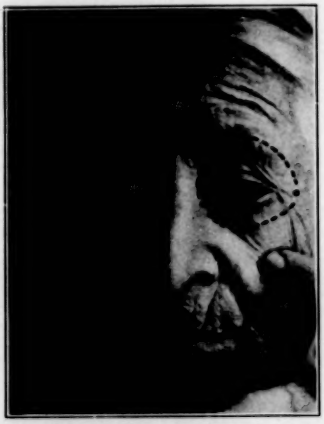


Fig. 1.—Removal of orbit for melanotic sarcoma. Note growth on lower lid. Dots mark points of deep nerve blocking. Dotted line marks superficial infiltration. The dot at the outer angle of the orbit is placed about 2 cm. too far outward.

REPORT OF CASE

Feb. 1, 1915: The patient, a white woman, aged 81, referred by Dr. Blewett of Citronelle, Ala., gave a history of having had a slow growing fungus-like tumor removed seventeen months before. It slowly recurred and was again removed in seven months. It reappeared two months ago and appeared as a slightly nodular, darkly pigmented growth bulging under the conjunctival margin of the lower lid. The growth was fixed to the conjunctiva and the skin margin and was approximately 1 cm. in its long diameter and was not attached to the bony orbit nor the bulbus oculi.

An examination of the fundus disclosed no pigmented growth or other abnormality. A tentative diagnosis of melanotic sarcoma prompted a search for metastatic growths, revealing a small patch of verruca senilis on either cheek, a small red papilloma above the right nipple and one near the seventh cervical vertebra. A small area of verruca senilis had been removed from the left cheek five months before. Otherwise there was nothing even slightly suggestive of a malignant growth. Albumin and casts were found in the urine but no melanogen.

Operation.—A preliminary injection of scopolamin $\frac{1}{200}$ grain and morphin $\frac{1}{4}$ grain was given seventy-five minutes before operation, and scopolamin $\frac{1}{200}$ grain and morphin $\frac{1}{6}$ grain hypodermically, thirty minutes before operation. A line of local anesthesia infiltration was made one-half inch below the lower palpebral margin and carried well down on the malar border. The infiltration was then carried within the orbit and close to the orbital floor. This permitted dissection along the orbital floor where I determined the growth was free from the periosteum.

A heavy needle 5 cm. in length was then passed into the deep orbit following the median bony wall well up toward

the orbital apex, the tissues being slowly infiltrated with a 1 per cent. novocain-epinephrin solution along the course of the needle. In this manner the frontal and lacrimal nerves were blocked, with a periosteal infiltration up to the optic foramen, about 5 c.c. of solution being used (after Braun).

Similarly a needle was passed along the lower orbital margin well in toward the foramen rotundum. In this manner

Fig. 2.—Melanotic sarcoma apparently arising in the conjunctiva.

I accomplished a perineural infiltration of the infra-orbital nerve and its branches in the sphenomaxillary fissure, using about 3 c.c. of a 1 per cent. solution (Fig. 1).

The third needle was passed into the orbit a little to the outside of the supra-orbital notch, following the bony wall well up toward the apex and producing a perineural infiltration of the supra-orbital nerve. The superficial line of skin infiltration was then completed with a 0.5 per cent. solution encircling the external orbital margins. The entire orbital contents together with the periosteum were then removed after the usual method.

In addition I employed an original procedure, so far as I am able to ascertain, by avulsing the supra-orbital and infra-orbital nerves and cleaning out the fatty tissue and periosteum from the supra-orbital notch and the infra-orbital canal, thereby removing a possible source of neoplastic recurrence. The entire operation was performed with the patient conscious and without pain or discomfort. She returned to the ward with a pulse of 80.

Postoperative History.—There was no recollection of the operative period. The patient suffered practically no postoperative pain due to the avulsion of the supra-orbital and infra-orbital nerves. An area of anesthesia presented over the distribution of the nerves. She was at once placed on a regular ward diet, was allowed to be up and about and was sent home in five days, healing occurring by granulation.

On Aug. 23, 1915, the patient returned for examination in apparent good health with a clean and healed orbit. There was a melanotic nodule beneath the skin in front of the left ear and a second nodule below the left clavicle. The latter was removed under local anesthesia and on dissection presented the picture of a typical metastatic melanotic sarcoma. The urine at this and for the first time disclosed the presence of melanogen, indicating the probability of hepatic invasion.

Pathologic Report (By John A. Lanford, M.D.).—The specimen consists of the orbital contents together with the entire lower eyelid and the major portion of the upper lid. A slightly nodular pigmented and semisolid growth 1 by 0.5 cm. by 0.5 cm. in diameter lies in the conjunctiva of the lower lid and does not involve the eyeball or other structures. On section it presents a smooth, firm, deeply pigmented surface. Microscopic section discloses a melanotic sarcoma apparently rising from the conjunctiva.

CONCLUSION

The facility with which removal was performed without pain or risk to this patient bearing such an unfavorable prognosis warrants its further application under similar or more favorable circumstances. The early return of metastasis in this case substantiated our selecting a safe operative procedure.

Van Antwerp Building.

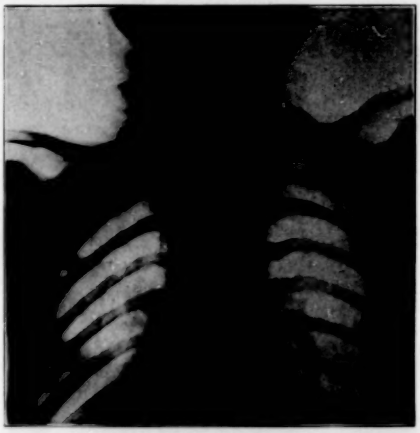
REMOVAL OF HALF-DOLLAR AND QUARTER-DOLLAR FROM ESOPHAGUS OF CHILD

H. B. Decherd, A.M., M.D., and W. D. Jones, M.D.
Dallas, Texas

Paul D., white, aged 8 years and 2 months, of Pittsburg, Texas, June 22, 1915, had a half-dollar and a quarter-dollar in his mouth, and "skinned the cat" on a horizontal iron bar. Both coins were suddenly swallowed. His physician gave him salts and castor oil several times during the next few days, as well as olive oil enemas. He vomited quite often for two days; he could swallow no solids—only water, soups and milk, and these not in large quantities. June 28, the boy was brought to us at Dallas, and the coins located as shown in the accompanying roentgenogram. Note that the quarter shows slightly below the half-dollar.

Under anesthesia (ether), and with the fluoroscope over the chest-wall, the coins were easily and quickly removed without the least traumatism. The half-dollar was first removed, it being more easily grasped by the forceps. Both coins were somewhat rusted and caked with food.

Our experience in removing a tack from the left bronchus of a 4-year-old child some months ago, together with this case, demonstrates the great ease of work of this char-



Half-dollar and quarter-dollar in esophagus.

acter when done with the aid of the fluoroscope on the chest-wall. Every minute movement of both forceps and foreign body can be observed with the greatest accuracy, and extraction performed in the same way. Even the tyro has nothing to fear if he has a good Roentgen-ray man to depend on. There were no complications, the child returning to his home next morning after eating a hearty breakfast.

Therapeutics

THE ALCOHOL HABIT

According to the Towns-Lambert treatment, patients who have been taking both morphin and alcohol should be treated for the morphin as previously described, and at the same time the alcohol should be gradually withdrawn. Such patients are likely to have a great deal of stomach disturbance and may not well retain their medication or food. Lambert thinks that sodium citrate in doses of from 5 to 10 grains, every hour, best relieves this condition, with or without from 10 to 20 grains of cerium oxalate or 5 grains of Tully's powder [compound powder of morphin], every two hours, for one or two doses.

Sodium citrate should be given in solution. Cerium oxalate is a drug that cannot compare in value with bismuth subcarbonate. The compound powder of morphin treatment, of course, should not be used in patients who have both the alcohol and morphin habit.

Lambert describes in detail the treatment of the alcohol habit about as follows: The belladonna mixture described under morphinism and the five compound cathartic pills and 5 grains of blue mass are given together at the first dose; then the belladonna mixture is continued every hour, day and night. Twelve hours after the initial dose of drugs, the patient is again given from three to five compound cathartic pills, and twenty-four hours after the initial dose he is again given the cathartics, followed by salines if necessary, and again the cathartics and salines are given at the thirty-sixth hour. Some hours after the last dose the bilious stool should appear. Sometimes, Lambert says, it is necessary to carry on the treatment over one or two more cathartic periods with compound cathartic pills and blue mass, at intervals of forty-eight hours.

Elderly or nervous patients, especially if they have been on a long debauch, "are tapered off with 2 ounces of whisky for four or five doses through the first twenty-four hours." Also, if these patients are excessively nervous and cannot sleep, a mixture of "chloral hydrate 20 grains, morphin one-eighth grain, tincture hyoscyamus one-half dram, tincture of ginger 10 minims, tincture capsicum 5 minims, and water one-half ounce," which he thinks is "the best hypnotic for them." After the twenty-four hours, or sooner, if the circulation requires it, these patients should receive strychnin and digitalis.

If the patient has the cocain and alcohol habit combined, as in the treatment of the cocain habit alone, no cocain is given at all, but strychnin must be given from the beginning.

This seems like pretty serious medication. Although the value of free catharsis is recognized, some less complicated cathartic drugs and preparations will doubtless act as well. In weak and elderly patients, as emphasized by Lambert, support of the heart will be urgently needed, and in patients who have not the combined morphin and alcohol habit, but only the alcohol habit, morphin is often good treatment to quiet excessive cerebral excitation. It is much better to combine the morphin hypodermic treatment with a hypodermic dose of ergot. The ergot should be given intramuscularly, best into the deltoid muscle, an hour before the morphin is administered. The ergot will strengthen the heart, raise the blood pressure, act as a mild sedative to the central nervous system, and accentuate the quieting effect and the soporific effect of the morphin that is given an hour following. Hence the dose of morphin need not be so large as it otherwise must be, as any individual with cerebral excitation may be irritated and not quieted by a small dose of morphin.

As stated by Lambert, many of these alcoholic patients have gastritis, and any such combination as the hypnotic mixture above described is likely to be immediately vomited. The use of ginger and capsicum is the old method of causing an irritation of the stomach not unlike that of clear whisky. These spices have been given for years to prevent the stomach craving for its usual alcohol dose. Therefore there is nothing new in this part of the treatment. The small dose of tincture of hyoscyamus can play a very small part in the quieting action of the hypnotic mixture described. If atropin is advisable, or scopolamin is needed, it had much better be given hypodermically to get the desired effect.

Chloral hydrate is a most valuable hypnotic, and, if the heart is not too weak and the stomach will retain it, it should be the hypnotic of choice. But it is urged that it should not be combined in the same prescription with the ingredients suggested. The absorption of the dose of morphin may be greatly delayed when so combined. Very active drugs, in serious conditions such as the prostration from the treatment of chronic alcoholism or of delirium tremens, should be given hypodermically, as they not only may be vomited, but they may not be absorbed and may remain in the stomach for hours.

It would seem that the Sceleth treatment of morphinism, modified to fit the alcoholic patient, would be much simpler than the Towns-Lambert treatment. The cathartic treatment is not so severe, and the drugs used are much more simple, and the prostration cannot be so great.

DELIRIUM TREMENS

This condition so frequently occurs, and the symptoms and treatment are so well understood, that it is only necessary to refer to some of the newer discoveries in regard to conditions present in this alcoholic condition of the brain.

Hirsch[1] finds a profound disturbance of the suprarenal glands in those dying from alcoholic poisoning. Kaiserling and Orgler, in 1902, were the first to note the presence of liquid crystals or droplets in the cortex of the human suprarenal glands. Hirsch says that nearly all investigators agree that these doubly refractive droplets are esters of cholesterol or lipoids. Somewhat similarly refractile globules have been found in the liver when there is fat or cloudy swelling, and in diseased softened parts of the central nervous system in certain conditions.

Hirsch states that Dr. E. R. Le Count of Chicago has constantly found alterations in the cortex of the suprarenals in individuals dying of delirium tremens. The most important changes are the diminution of the yellow color of the cortex and the presence of doubly refractive droplets. It has also been chemically determined that the cholesterol content of the suprarenals is diminished in delirium tremens. In fact, it may also be stated from these postmortem findings that if these changes are not found in the suprarenals, the patient died of some other cause than

1. Hirsch, E. F.: A Morphologic and Chemical Study of the Double Refractive Fats of the Adrenals in Delirium Tremens, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2186.

delirium tremens, and Hirsch found that in chronic alcoholics without delirium tremens these refractive lipoid droplets were not increased in number, but were even diminished, showing that the suprarenals were subjected to some other kind of toxin. Acute toxic processes have been shown to diminish the refractive bodies of the suprarenals.

Hirsch quotes Landau as stating that the suprarenals "are not concerned with lipoid formation, but rather the adrenal cortex contains an increased lipoid content under different conditions which have in common only a retention of the lipoids, or are characterized by an abnormally increased lipoid formation, the opposite holding true in conditions accompanied by a lipoid-poor cortex."

It would seem that when the heart is weak and the blood pressure low, as it generally is in delirium tremens, whatever other treatment was used, epinephrin would be of value.

This disturbance of these suprarenal glands may account for the development of the "between toxin" mentioned by Steinebach.[2]

Steinebach has found that when the pupils in delirium tremens do not react to light, the pressure of the cerebrospinal fluid has been increased, as shown by spinal puncture; and after some of the fluid in the cerebrospinal canal has been allowed to drain away, the patient may drop to sleep without any drug. Steinebach has used lumbar puncture in eighteen cases of delirium tremens, and his results have confirmed his belief that abnormally high cerebrospinal pressure is responsible for some of the symptoms of delirium tremens. Although alcohol has been found in the cerebrospinal fluid in alcoholic poisoning cases, Steinebach thinks that it is not the alcohol that irritates the meninges to cause an increased secretion of fluid, but that probably the alcohol generates a sort of toxin (which he terms "between toxin"), which can cause an increased production of cerebrospinal fluid. He therefore thinks that spinal puncture not only will relieve pressure, but also will remove some of this irritant toxin and aid in saving the patient.

Though alcoholic cerebral edema is probably due to a toxin acting on the vessels of the meninges, we must not forget that serous meningitis due to an infection may occur in an alcoholic patient.

Alcoholic wet brain is discussed by Sceleth and Beifeld.[3] These observers see annually about 2,500 cases of alcoholism; consequently, their ability to give important data concerning delirium tremens is unquestioned. They state that the longer the history of alcoholism, the more frequent will be the attacks of delirium tremens, and the more likely is the patient to develop wet brain, and the greater the number of attacks, the more likely does cerebral edema follow the delirium. It never precedes it. In other words, alcoholic wet brain is a late symptom of delirium tremens and part of the toxic effect of alcoholic poisoning. They also find that a long period of overuse of alcohol must precede the condition of real delirium tremens, namely, from seven to ten years, which may be termed the "incubation period." It has long been recognized that chronic alcoholic patients have so long maltreated their stomachs, intestines and livers, to say nothing of their kidneys, that they are unable properly to destroy toxins, perhaps quite largely from the injury done the "Pasteur filter" of our bodies, namely, the liver.

Added to the disturbed metabolism caused by sclerosis, or chronic inflammation, of the glands is the inability of the organism to care properly for waste products, to detoxicate them, so to speak. Also the delirium tremens patient so frequently has gastritis, with vomiting, during his attack, that starvation adds its element to the production of an acidosis, and acidosis plays quite an active part in his serious condition, and may cause his death.

Sceleth and Beifeld find that an acute infection like pneumonia, and a serious injury like the fracture of a bone, and even a mental shock, is very frequently the predisposing cause of delirium tremens.

Delirium tremens may occur in several degrees of intensity. There may be the simple "touch of the horrors," which means the patient is much nervously excited, disturbed by the least noise, and may have hallucinations, more or less, of sight and hearing, as well as sleeplessness. He is also pretty sure to have tremor. These investigators find the incipient period of a severe attack to be about two or three days, during which period proper treatment and good sleep may forestall the actual development of the condition of delirium tremens. As is well known, delirium tremens may be accompanied by subnormal temperature, cold skin and general prostration; or, in a strong individual not seriously diseased, there may be some fever, flushed face, and increased blood pressure, with a strongly acting heart. It is obvious that these two types of delirium tremens require very different treatment. The first type must be supported; the second type may be depleted. Both, Sceleth and Beifeld find, require strychnin in place of their alcohol.

The average length of time that delirium lasts is about five days. It may terminate sooner; it quite frequently lasts longer. These observers find that the comatose or wet brain symptoms will occur in from 10 to 15 per cent. of the cases. If cerebral edema is to occur, the patient's delirium becomes of the low, muttering type; he may have a slight rise in temperature, and the pulse becomes more rapid and weak; the tongue becomes coated, the breath foul, the teeth covered with sordes; and albumin often appears in the urine. In other words, the cerebral irritation has become one of cerebral pressure. With this pressure Sceleth and Beifeld say that vomiting does not occur. Kernig's sign is always more or less present, and when there is much rigidity of the muscles, especially of the back of the neck, the prognosis is bad. The deep reflexes are at first increased during the cerebral irritation period, and later, with wet brain symptoms, are first sluggish and then may be absent. "The pupils are usually small, equal, regular, responding sluggishly to light; they dilate somewhat if the patient can be aroused, narrowing down once more as he relapses into coma."

Contrary to the observations of Dana and of Steinebach just quoted, Sceleth and Beifeld do not find the cerebrospinal fluid under much pressure. In an uncomplicated case of alcoholic wet brain there is no special abnormality in the cerebrospinal fluid.

In numerous necropsies performed by Dr. E. R. Le Count on patients who have died of delirium tremens, he has not found signs that the fluid in the

2. Steinebach, R.: Deutsch. med. Wchnschr., 1915, xli, No. 13; abstr., The Journal A. M. A., May 8, 1915, p. 1620.
3. Sceleth, C. E., and Beifeld, A. F.: Am. Jour. Med. Sc., 1915, cxlix, 881.

meninges and ventricles of the brain was under increased pressure before death.

In making a diagnosis of a patient who is brought to the hospital comatose, Sceleth and Beifeld urge that trauma should not always be looked on too seriously. The history of an injury may cause the alcoholic condition to be overlooked. On the other hand, a fracture at the base of the skull, when no serious external injuries are in evidence, may be diagnosed by bleeding from the ears or nostrils; by finding cerebrospinal fluid exuding from these regions; by slowly developing ecchymoses over the mastoids or about the eyes; by paralysis of the muscles of one or more extremities, and by spinal puncture showing blood in the cerebrospinal fluid.

An acute meningitis with sudden coma may be diagnosed by the appearance of the fluid in cerebrospinal puncture, and by its bacteriologic examination. Uremic coma is difficult to separate from the wet brain of alcoholism. In uremia, convulsions are likely to occur, and there may be exaggerated knee jerks, while the deep reflexes are generally absent in coma of wet brain. Apoplexy, cerebral embolism, and cerebral thrombosis generally give localized paretic symptoms.

The wet brain of alcoholism lasts, on an average, about three weeks, and there may be symptoms of this condition for many more weeks; but the mortality, according to Sceleth and Beifeld, is nearly 75 per cent. Death is generally hastened in these cases by a coincident, or later developing, bronchial pneumonia. Cardiac failure, and denutrition from inability of the patient to take nourishment, are serious factors in the downward tendency of alcoholic wet brain.

In the treatment of this condition, every effort should be made to get some nourishing liquid into the patient, even if it is necessary to pass a nasal tube or give rectal feeding, though such methods are not very satisfactory. The bowels should be moved as often as seems advisable. Cardiac tonics are certainly in order. Sceleth and Beifeld have not found spinal puncture of value, contrary to the findings of Dana and Steinebach, quoted above. While they find that ergot is of value in the sthenic type of delirium tremens, they have found it harmful in alcoholic wet brain. This malaction of ergot is difficult to understand; provided that indications for ergot are present, namely, if the blood pressure is low and the heart not too weak, and with more or less paralysis of the intestines, with possibly distention with gas, and with low fever it would seem that ergot would be indicated. If the heart is so weak as not to withstand the increased peripheral resistance caused by ergot, and if the blood pressure is not low, ergot would not be indicated. Ergot, to be of value in such conditions, must be given intramuscularly, and not too frequently.

Neurasthenia and the War.—A fact of importance which we may mention is that neurasthenia and other neurotic conditions are apparently becoming much less common, in spite of the anxiety and strain resulting from the war. This is not difficult to understand, as the experience of most people who have been accustomed to the treatment of nervous conditions indicates that it is not so much the great tragedies of life which are apt to upset the equilibrium of the nervous system but small daily worries persisting for long periods of time, and above all lack of occupation and interest in life.—Dr. W. H. B. Aikens, address before Toronto Academy of Medicine.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

EURESOL (See N. N. R., 1915, p. 268).—The following dosage form has been accepted:

Euresol pro Capillis.—Euresol perfumed to render it suitable for scalp lotions. Manufactured by Knoll and Co., Ludwigshafen a. Rh., Germany, and New York (Merck and Co., New York).

POLLEN EXTRACT.—Pollen Vaccine.—A solution of pollen protein.

Actions and Uses.—Pollen extract is employed for the relief or prophylaxis of a common type of hay fever or pollinosis. Pollen extract prepared from the pollen of one plant (for instance, ragweed) is not primarily intended for use in cases due to pollen from other plants, as grasses and goldenrod, though persons subject to autumn catarrh frequently react to the pollen of more than one species. The patient's susceptibility may be tested by rubbing a small quantity of the pollen vaccine into a scratch of the skin; if the patient is sensitive to that particular pollen, an urticarial wheal results. To avoid systemic disturbance, it is recommended that no therapeutic injections be made until the reaction from this cutaneous test has subsided completely. Treatment with pollen extract has seemed to give a varying degree of relief in a number of cases. In some cases the psychic element seems to play a part, and in such instances it is difficult to determine to what degree the good results are due to suggestion. The immunity from symptoms conferred by treatment is apparently not permanent, and in most cases does not last longer than a year.

Dosage.—It is regarded as important that the individual dosage should be determined by testing each patient's susceptibility, as sensitiveness varies greatly and an overdose may cause disagreeable and alarming symptoms or possibly even death. A method used for such test is to make a series of scratches on the patient's skin (it is important that these should be made at some distance from the scratches of the first test) and to apply to these scratches 25 per cent., 10 per cent., 1 per cent. or even weaker dilutions of the vaccine. From 5 to 10 drops of the dilution which fails to produce a definite skin reaction may be injected subcutaneously as the first dose. Injections, increasing by a few drops at first, and later by the use of a stronger dilution, may then be given at intervals of a few days or a week.

H. K. Mulford Company, Philadelphia.

Hay Fever Vaccine, Mulford (Autumnal).—Prepared by extracting the proteins from the pollen of ragweed (*Ambrosia artemisiaefolia*) and standardizing the solution by estimating the amount of protein contained in it. Preserved with trikresol. Marketed in packages of four syringes containing, respectively, 0.0025 mg., 0.005 mg., 0.01 mg. and 0.02 mg. of pollen protein; also in separate syringe packages containing 0.02 mg. of pollen protein.

The pollen, after being dried, is ground in a ball mill to destroy the cell membrane. It is then extracted with physiologic salt solution. This extract is precipitated with acetone; the precipitate is dried and finally extracted again with physiologic salt solution. The soluble proteins being brought into solution, a nitrogen determination is made of this extract, and it is then standardized according to (nitrogen) protein content.

MERCURIC SUCCINIMIDE (See N. N. R., 1915, p. 201).—The following non-proprietary preparation has been accepted:

Mercury Succinimide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

MORPHINE MECONATE (See N. N. R., 1915, p. 209).—The following non-proprietary preparation has been accepted:

Morphine Meconate, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

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SATURDAY, DECEMBER 4, 1915

THE PRICE OF QUININ

We in this country are inclined to feel that the scarcity of certain drugs is a local hardship. As a matter of fact, as indicated in articles abstracted recently,[1] the war has produced a stringency in the drug market everywhere. Among the drugs now expensive and difficult to obtain is quinin, the exportation of which from Germany has been forbidden for several months, and on which an embargo was lately imposed by Great Britain. When the British embargo was declared no German, Dutch or Javanese quinin salts had been obtainable on the New York market for some time. American manufacturers were reported to have withdrawn from the market and to be holding their dwindling stocks and inadequate output to fill previous contracts. Such contracts were being filled at 50 cents an ounce for hundred-ounce tins; but consumers obliged to purchase on the open market, at last accounts, were paying middlemen from $1.25 to $1.50 an ounce for quinin sulphate, while a little earlier prices of $2.10 and $2.25 were quoted.

Only once or twice since the Civil War (when $6.50 an ounce was paid in some instances—in depreciated currency to be sure) have these prices been equaled or exceeded. Between 1880 and 1884 there was a period of high prices, which stimulated an attempt to corner the supply of cinchona bark.[2] The breaking of this corner and the consequent dumping on the market of accumulated supplies, the increased cultivation of the plant and the increased alkaloid content of the bark produced by cultivation are held responsible in varying degree for the subsequent downward tendency of prices. Ten years ago the price quoted by domestic manufacturers was 24 cents an ounce in hundred-ounce tins. From 1910 to 1912, inclusive, it was 19 cents, but in January, 1913, and January, 1914, it was 25 and 30 cents, respectively.[3]

It is perhaps worth while to glance at the world situation with respect to quinin, in an effort to discover if any other factors beside the war are helping to produce the present high prices. Many of the market conditions are obscure, but the following appear to be the leading facts: Cinchona bark is produced in Java, India and Ceylon; only a comparatively small amount still comes from South America, and some is grown in Africa, Jamaica and a few other countries.[4] According to Kraemer,[5] about 80 per cent. of the bark of commerce is produced in Java. One of the leading countries in the manufacture of quinin is Germany, and other manufacturing countries include France, Great Britain, Holland, Italy, the United States, Java and India.[6] Not all of these countries manufacture quinin in an amount sufficiently exceeding domestic needs to affect the foreign market. Thus, India, a large producer of cinchona, is said to use virtually her whole crop of bark, and also to require some Javanese bark for the domestic manufacture of quinin, which alkaloid is all or practically all consumed within the country.[7] The world's market depends for cinchona bark chiefly on Java, and for quinin mainly on Germany.[8] The United States is Germany's largest customer, besides being the heaviest consumer of quinin among all the countries of the world.[8] The effect of any disturbance in the world's supply of quinin would therefore be felt most acutely here. The war, of course, has affected the supply by causing an increased demand for quinin for the use of the armies, by interfering with the free movement in commerce of the bark and the manufactured alkaloid and salts, and in other ways, both direct and indirect.

Certain other elements, however, enter into the situation, and some of these antedate the war. The shipments of bark from Java had been gradually rising, until in 1910 they reached a total of nearly 8,000,000 kg.[9] In July, 1913, it is understood that the planters formed an agreement to maintain prices by restricting the output. This agreement (to which European manufacturers are believed to be parties) has since been maintained with modifications necessitated by the war; and the downward trend of exports is indicated by the fact that the total shipments of bark from Java to Europe for the first nine months this year reached only 3,776,810 kg., as against 5,531,500 and 6,686,450 kg. for the same periods of 1914 and 1913, respectively.[9] The price quotations from American and British quinin manufacturers given above showed a rising tendency even before the time of this agreement. A fire which damaged a por-

1. Miscellany, THE JOURNAL A. M. A., Nov. 20, 1915, p. 1840.
2. National Standard Dispensatory, 1909, Article Cinchona, p. 447.
3. A table of prices for quinin sulphate from 1890 to 1915 (Chem. and Drug.) shows a similar movement of prices in Great Britain, namely, from 1 shilling 5 pence to 1 shilling, 1890 to 1905; 8½ pence 1909 to 1911, inclusive, and 9½ pence, 1 shilling and 1 shilling 3½ pence for 1912, 1913 and 1914, respectively.
4. King's American Dispensatory, 1905, Article Cinchona, p. 538.
5. Kraemer, Henry: Scientific and Applied Pharmacognosy, 1915, p. 738.
6. Information supplied by the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce.
7. Roeder, George: Tropenpflanzen, 1909, xiii, 473, quoted in Digest of Comments on the Pharmacopeia.
8. Tunman, O.: Ap.-Ztg., 1910. p. 565; also information from the Bureau of Foreign and Domestic Commerce.
9. Oil, Paint and Drug Reporter, Oct. 25, 1915, p. 45.

tion of the Javanese bark fields early this year probably did not affect the situation seriously.[10] A somewhat significant straw in the wind, possibly, is the report that the quinin factory at Bandoeng, Java, has declared a dividend of 28.5 per cent. for last year, as against 17.5 per cent. for the previous year.[9]

While some of the factors in the situation were operative previously, it would seem that the recent abrupt rise in the price of quinin is due chiefly to causes connected with the war. The present extremely high prices, therefore, may be temporary. Moreover, there is said to be a probability of increased output from the Amsterdam factories.[11]

RECTAL FEEDING REINVESTIGATED

The limitations of rectal feeding as a mode of introducing true nutriment into the organism, in the sense of furnishing calories of protein, fat and carbohydrate, have frequently been pointed out in THE JOURNAL. The practice of injecting nutrient enemas into the lower bowel has largely been given up, at least in the manner in which the procedure was carried out a generation ago. Nevertheless there are practitioners who continue to assume that a poorly digested mixture of milk and other partly soluble food products can experience some absorption and utilization from the colonic regions into which they are introduced, especially if the administration is slow, as is necessitated by the drop method of introduction employed by Murphy for saline solution.

The essential difficulty in the conventional plan of rectal feeding lies in the fact that practically all foodstuffs need to be digested very completely before they can be utilized from the alimentary tract. The lower bowel contains no satisfactory ferment equipment for accomplishing the essential digestive changes. Therefore, unless special and specific precautions are taken to furnish all of the nutrients in a completely digested form they are, theoretically at least, of little avail for rectal alimentation. In practice it is almost impossible, or at any rate impracticable, to obtain any of various foodstuffs, with the possible exception of sugar, in a suitable condition of digestion. Water and salts are, of course, readily absorbed from an enema; and because of the relief to a patient who has been unable to retain ingesta of any sort administered by way of the mouth, an apparent benefit is ascribed to the nutrients dissolved in the introduced fluid. The disappearance of water from the latter does not assure the absorption of the food therein as well.

How futile the rectal feeding of peptonized milk may be, even when it can be continued for days without discomfort (which is rarely the case), has been shown in actual metabolism experiments by Adler[12] of the University of Maryland. In order to ascertain the extent of absorption of food administered by this method, the colonic intakes of nitrogen for from four to six days were compared with the output in the urine and the return loss by rectum. Patients with gastric and duodenal ulcers, but without abnormality of nutrition, were employed as subjects. The largest amount of nitrogen that Adler was able to supply daily by rectal feeding was 3.9 gm., of which 2 gm. were returned with the stools. In no case was there a disappearance of more than 50 per cent. of the protein supplied; in some cases the apparent absorption was as low as 30 per cent. The average amount of nitrogen absorbed in these cases was 1.14 gm. per day, equivalent to 7.1 gm. of protein.

From a practical standpoint and in consideration of the usual duration of such attempts at rectal feeding of protein, the results are practically negligible. Adler remarks that when the amount of nitrogen actually lost by the individuals is compared with the amount that it is possible for them to absorb by colonic feeding, one must realize how little is accomplished. It should be noted, however, that the human organism can experience very considerable losses of protein without permanent damage. Starvation experiences extending over several weeks testify to this. It would seem more rational, therefore, if rectal feeding is to be attempted at all, to concentrate the effort on that type of foodstuff which is most likely to be absorbed and promptly utilized. Glucose belongs in this category.

THE SOURCE OF ENDOGENOUS URIC ACID

The successive changes in the conceptions held by scientific men regarding the sources and formation of the uric acid excreted in the urine are indicative of a steady progress in our knowledge. Not long ago, uric acid was still looked on as an intermediate stage in the metabolism of simple proteins—a step in their transformation to urea. Modern knowledge of the chemistry of the purins turned a new light on the problem, and indicated the direct chemical relationship between nucleoproteins and their derivative purins on the one hand, and uric acid on the other. The leukocyte hypothesis of Horbaczewski, postulating a direct relationship between the disintegrating nucleated colorless blood corpuscles and uric acid production, likewise had its vogue, until it was clearly demonstrated that leukocytosis and uric acid elimination are by no means necessary concomitants.

Some years ago Burian furnished a helpful suggestion by pointing out that the excreted uric acid of man appears to have a twofold source. One, the exogenous, is clearly related to the food supply, and is directly referable to the purin-yielding substances or free purins present in the diet. Uric acid is the metabolic end-product of these compounds. The uri-

10. Oil, Paint and Drug Reporter, Feb. 1, 1915, p. 43.
11. Chem. and Drug., Nov. 6, 1915, p. 49.
12. Adler, Harry: Value of Rectal Feeding, Am. Jour. Med. Sc., 1915, cl, 562.

nary output of uric acid can, as is now generally appreciated, be markedly increased or diminished by the expedient of augmenting or decreasing the supply of purins in the ingesta. The other, or endogenous, source of uric acid has not been so clearly ascertained. It represents the origin of that small yet ever present fraction of the usual output which is realized even in the absence of all purin-yielding foods from the ration. Evidently its origin is to be sought in tissue sources.

Hypotheses regarding the endogenous uric acid have not been wanting. Its formation has been attributed to actual synthesis from simpler compounds. It has been looked on as the end-result of the metabolism of the cellular nucleoproteins, representing the wear and tear of the nuclear materials of the organism. This has, in fact, been a widely taught view, particularly at a period when the endogenous output of uric acid was believed to be a constant quantity for the individual.

According to a view offered some time ago by Mares, the activity of the digestive glands is peculiarly concerned in the production of that fraction of the uric acid output not accounted for by ingested purins. This theory, that endogenous uric acid may arise from glandular activity, has received some substantiation from recent experiments by Mendel and Stehle[1] at Yale University. These show that materials free from uric acid precursors are not necessarily entirely devoid of influence on the uric acid output. Conditions which tend to stimulate the alimentary secretory glands seem to augment the hourly output of uric acid while the provocative influences last. Proteins, for example, which induce a more copious flow of digestive secretions than do fats or carbohydrates, tend to promote a larger output of endogenous uric acid than do latter foodstuffs in the course of their digestion. Beside the effect of these food stimuli in bringing about an increased elimination of uric acid, a comparable one is produced by the administration of pilocarpin, which is known to stimulate the digestive glands. Atropin, which inhibits secretory activity, was found to suppress the uric acid output normally noted to follow the ingestion of certain foods. The passage of indigestible, bulky agar-agar through the digestive tract did not cause the effect which would be expected if the mere work of the intestinal musculature were a significant factor in endogenous uric acid production.

If this view, supported by Mendel and Stehle, that a portion at least, of the endogenous uric acid may originate from the activity of the alimentary secretory apparatus proves tenable, several hitherto obscure facts can be explained. It becomes evident why the output is lowered notably in starvation, when the alimentary tract is not functioning. The often noted apparent constancy of the endogenous uric output (on purin-free dietaries) is then merely the expression of an unforeseen uniformity in the degree to which the digestive processes are involved by the diets in question. On the other hand, a varying endogenous output no longer offers an unsolvable puzzle.

1. Mendel, L. B., and Stehle, R. L.: The Rôle of the Digestive Glands in the Excretion of Uric Acid, Jour. Biol. Chem., 1915, xxii, 215.

THE TRAGEDY OF UNPREPAREDNESS IN MEDICINE

A recent number of a periodical published in the interest of osteopaths contains a number of references to the death of a boy from diphtheria. A death from any cause and even one from diphtheria would not usually have caused so much comment, but this boy happened to be the son of the editor, who is an osteopath. The reports show that the disease was not recognized until a physician—a graduate of a Class C medical college—was called in, and he thought lobelia was better than antitoxin. The editor is now mourning the death of his son, regrets that antitoxin was not used, and has started a campaign among osteopaths urging the use of antitoxin in diphtheria. Pathetic as are the statements of this heart-broken father, they show unquestionably how slight was his knowledge of the simplest fundamentals of medicine. They show also that the admission to practice of any one who is tied down to a theory, a cult or a fad, who has not previously been trained in the underlying medical sciences, is a menace to the public. Some of the editor's statements follow (the words in brackets and the italics are ours):

> Billie had diphtheria four days before we knew what he had. . . . I had *never seen a case of diphtheria before; never even thought of looking at his throat.* . . . Dr. —— was called the fourth day and diagnosed the trouble at once. He is an M.D.; has had wide experience; has had the training so many of us have not had.

Here is, indeed, a frank acknowledgment. In another paragraph he says:

> For many years I have been interested in diphtheria; have tried to figure out what I could do if my boys ever got it. Talked with —— [named two osteopaths] and many others *in re* antitoxin. They usually *didn't believe in it.* I suggested using it on Billie when Dr. —— [the M.D. referred to in the foregoing paragraph] was sure it was diphtheria. He thought lobelia best.

Unfortunately, the "graduates" of some low-grade medical colleges are deplorably lacking in their medical training. The editor continues:

> I don't understand antitoxin; I can't understand how a poison can cure disease or neutralize poisons. Yet when the death rate is cut from 50 per cent. to 10 per cent., isn't it best to be a physician first, an osteopath second?

And in another paragraph:

> Billie depended on his father. I in a way failed him. While I lived up to the best light I had, still *my osteopath's training obscured my sense of fairness;* I think now I made a mistake. I did not give him the best care that his generation afforded.

This periodical also prints an editorial reproduced from another osteopathic periodical which is likewise advocating the use of antitoxin in diphtheria. Extracts from this editorial show that other osteopaths are likewise seriously ignorant of the simplest facts of bacteriology, of infectious diseases and of the methods of preventing their spread. For example:

> Much ignorance regarding and much unreasoning opposition toward the administration of antitoxin for diphtheria still exist in our profession.

Again:

> Some who criticize antitoxin have never treated a case of diphtheria. Others have never seen [possibly never recognized] a case. Some admit freely they would refuse to treat diphtheria *if "they knew what they were getting into."* They explain that they "do not cater to that kind of practice." They "do not like contagious diseases."

Another osteopath is quoted as saying:

> How many of us ever saw a case of diphtheria during our student days? Even if we used antitoxin how many of us would know how to use it? Personally, I believe in it but I regret to say, *I doubt if I would know a case of diphtheria if I saw it;* was not trained to know it. . . . Two days ago I talked to a 1915 graduate who has never seen a case of measles, scarlet fever, diphtheria, erysipelas, typhoid fever, or a single obstetrical case. He knew all about mumps as he had them himself during his senior year.

The paragraphs quoted show the fallacy of the belief, which appears to be prevalent in some states, that an individual may be safely permitted to practice a single branch of medicine, or make use of a single method of treatment, without first undergoing a complete course of instruction in the fundamentals of medicine. If the editor of the paper quoted, before specializing in osteopathic methods, had obtained a complete medical training, it would have enabled him not only to recognize diphtheria in its earlier stages and possibly prevent the death of his son, but also to understand why antitoxin has reduced the death rate in diphtheria "from 50 per cent. to 10 per cent." An important question — as far as the public is concerned — is: How many other children have lost their lives in his practice and in that of the thousands of others who have assumed the rôle of physicians, but who are unable to "know a case of diphtheria if they saw it" or who cannot "understand" or do not "believe in" antitoxin? And diphtheria is only one of the many diseases, contagious or otherwise, which for their most favorable treatment require a positive and early diagnosis. While urging other osteopaths to make use of antitoxin in diphtheria, therefore, this editor at the same time might well urge that all practitioners of osteopathy and other cults enter some good medical school and complete their medical education so they may give their patients the benefit of the researches of Pasteur, Koch, Klebs, Flexner and others, which have done so much to reduce the death rate from contagious diseases and saved untold thousands of lives by the prevention of epidemics. If the death of this small boy will lead to such a reform, he will not have died in vain.

THE STATES RELATIONS SERVICE

The interdependence of medicine and a large number of the natural sciences is being recognized more forcibly today than it was a few years ago. To cite a single illustration, it is not long since entomology was regarded as something quite foreign to the practice of medicine; but the growing recognition of the very important rôle of insects in the transmission of disease has created a demand for detailed information of the life habits of various species, such as the mosquito, the fly, the body louse and the flea. Instances of this sort could easily be multiplied. It is in harmony with these modern mutual relationships in science that the work of the U. S. Department of Agriculture has frequently been of immediate interest to the medical world. Indeed, this is true to an extent which the casual observer might not easily suspect; for various activities of the department, such as those related to the enforcement of the Food and Drugs Act, to the investigations of the Bureau of Chemistry, and other branches of this service have no peculiarly logical connection with agriculture more than with other aspects of governmental management.

Under the plans adopted by the last Congress for the reorganization of the federal Department of Agriculture, the States Relations Service was formally established by Secretary Houston, and began its activities July 1, 1915. This new organization developed on the foundation of the Office of Experiment Stations, which it will include. Of further interest from a medical point of view is the establishment of the Office of Home Economics, which will include investigations relative to foods, clothing, and household equipment and management.

The Office of Experiment Stations, which remains an integral part of the new and larger organization, was organized in 1888 under the directorship of the late Prof. W. O. Atwater. In 1894 the state experiment stations were specifically authorized by Congress to include the study of the food of man in their inquiries and report their progress to the department. At this time an appropriation of $10,000 was made for investigation, under the direction of the Office of Experiment Stations, of "the nutritive value of the various articles and commodities used for human food." Subsequent to this came the numerous contributions of technical and popular data which have done so much to extend knowledge of the science of nutrition in the United States. Some of the work, notably that involving the development of the respiration calorimeter and the measurements of the metabolism of matter and energy in the human body, has become fundamental in the science of physiology. The extensive compilations of the composition of food products—analytic records which are used everywhere for purposes of instruction and research—as well as the popular expositions of the uses of foods, and their

composition and preparation for the home, have interested thousands. A total of 132 nutrition publications have been issued, of which sixty-two are technical bulletins. The publications as a whole, including the often misnamed "Farmers' Bulletins," have been much in demand, the total distribution amounting to millions of copies. Now the scope of the work is to be increased to include studies of agricultural products in their relation to clothing and other uses in the home. Anything which seems likely to lead to some progress in the long neglected field of the hygiene of clothing will surely be welcomed by the medical profession.

From an initial staff of three persons, the number of employees has grown, in the Office of Experiment Stations, to more than 250; the fund for its maintenance rose from $10,000 in 1888 to $1,930,780 in 1915. We shall expect continued efficiency from the new States Relations Service.

Current Comment

STATISTICS OF HEALTHY DIPHTHERIA CARRIERS

Two years ago the United States Public Health Service conducted an investigation at Detroit with the purpose of ascertaining the distribution of diphtheria carriers. The determination of the percentage of carriers was made shortly after a time of greatly increased prevalence of diphtheria. The conditions under which the study, which has just been reported,[1] was carried out differ from most previous investigations along similar lines in that it was not confined to groups in institutions or selected portions of the community. It represented rather the incidence of diphtheria carriers determined by cultures taken indiscriminately from healthy persons of all classes. Out of about 4,000 healthy persons, thirty-eight, or nearly 1 per cent., were found to harbor the *Bacillus diphtheriae* as revealed by cultures made from the throat, from the nose, or both. Out of nineteen cultures isolated from nineteen carriers, two were found to be virulent, suggesting a possible 0.097 per cent. of the individuals examined as carriers of virulent bacilli. Twenty-nine of thirty cultures of *Bacillus diphtheriae* from clinical cases were virulent, and all thirty were acid producers. Comparison of the value of different types of single cultures for the detection of carriers shows that the throat culture gives the lowest, and the combined nose and throat the highest results. The latter, however, is but slightly higher than that from the nose alone. The combined results of a throat and of a nose culture give markedly better findings than those of any single culture. These results are believed to be a fair index of the proportion of carriers among the population. Based on the total number of inhabitants, it means that in a city of half a million persons there are about 5,000 carriers of diphtheria bacilli. The bacteriologists of the Public Health Service point out that the Detroit statistics are low compared with those obtained by the majority of workers in this field. According to the literature cited, results above 2 per cent. are found more often than results below this figure. The data cited for a group of persons examined at the time of the epidemic of diphtheria at the Johns Hopkins Medical School and Hospital[2] in 1911 indicated forty-five carriers among 1,290 persons, or 3.48 per cent. All reliable facts of this sort are of great value in the prosecution of epidemiologic studies in the interests of the public health.

1. Goldberger, Joseph; Williams, C. L., and Hachtel, F. W.: Report of an Investigation of Diphtheria Carriers, Bull. 101, Hyg. Lab., U. S. P. H. S., 1915, p. 29.

2. Ford, W. W.: The Recent Epidemic of Diphtheria in Johns Hopkins Hospital and Medical School: General Procedures Adopted, Bull. Johns Hopkins Hosp., 1911, p. 357. Moss, W. L.: Diphtheria Bacillus Carriers, Tr. XV Internat. Cong. Hyg. and Demography, 1913, iv, Part 1, p. 156.

BACK-FIRING

To many who have read the much over-written case of the Chicago infant who recently came into and went out of this world with certain deformities, the question doubtless occurred: What would the followers of Mrs. Eddy do in such a case? Logically the followers of this cult would have done just what happens to have been done by the physician in charge: Nothing. And the result, of course, would have been the same. Possibly because this line of thought is rather obvious, the *Christian Science Monitor* devotes over a column to the case. Under the sonorous title *"Ave Medicus Imperator,"* this journalistic champion of Mrs. Eddy's doctrines belabors the medical profession, charging that "the place of Caesar as a dispenser of life and death is to be taken by the modern physician," and, further, that "the hospital is to usurp the position of the arena." The article, of course, is wholly in the nature of a back-fire. The poor human mite, whose short but tragic life and equally tragic death have proved such a boon to the sensational newspapers and such a grief to the thoughtful, really "passed over" strictly according to the tenets of Mrs. Eddy's disciples. We assume, naturally, that even the most rabid of that sect would hardly claim that thought-waves, either long or short range, would remedy a congenital deformity. The baby died because "treatment" was "absent."

MISTAKEN ECONOMY AND THE TREAMENT OF THE CHRONIC INSANE

One hindrance to the adoption of improved methods in the care of the insane not infrequently is a mistaken idea of economy in the governing bodies of institutions. An average layman's idea of the economic principle underlying the care of the chronic insane probably is (at least, unless he has a personal interest in some member of this unfortunate class) that, within limits of decency, the less spent the better. Of course, for sheer humanity's sake, the insane must have food, clothing and adequate housing accommodations; they must be restrained from doing violence to themselves or to others, must receive necessary personal attention and must not be subjected to abuse. But, since the hopelessly insane are a total loss to themselves and to society, why spend money in any further attempt to

improve their condition? Such, it is not unfair to surmise, is the unformulated feeling which puts obstacles in the way of individualized work with deteriorated patients. Dr. E. A. Foley, in the last issue of the *Institution Quarterly*, reports the results of experiments which indicate that, quite apart from the humanitarian aspect, such work is worth while from the purely economic point of view. Two of the apparently most hopeless patients in the Jacksonville (Ill.) State Hospital were selected for experiment. Both had records of destructiveness, filthiness and most violent impulses; both had been expensive patients on account of the amount of clothing, bedding, furniture, etc., which they destroyed, and both were deteriorating. The patients were placed in charge of an especially patient and tactful attendant. At first hydrotherapy was employed; then the patients' interest was aroused by means of games and light work. Destructiveness and filthiness diminished; the patients became less vulgar and abusive; they became friendly to physicians and nurses. Of course, cures are out of the question, but the contentment and well-being of the patients have been vastly enhanced. From the financial point of view, there is a double gain. Not only are the patients now no longer destroying property: they are to some degree producers. So far as this experiment goes, such work appears to be of value from all points of view.

STREET DIRT, UNPROTECTED FOOD AND DISEASE

Prof. C. H. La Wall, chemist of the Pennsylvania dairy and food commission, is said to have found the following assortment of objects and substances in raisins exposed for sale on a Philadelphia street: pieces of prunes; beans and rice; strands of human hair and cat fur; cotton and wool fiber; straw and bits of bran; insect wings and legs; cigar and cigaret ashes, and a yellowed cigaret paper. While it does not appear that any of these unappetizing accessories were exactly proved to be carriers of contagion, the findings strongly suggest the possibilities of infection from food sold from uncovered pushcarts and stands.

The Potash Problem.—The scarcity of potash, which is used both in medicine and in manufacturing and agricultural processes, on account of the European war, bids fair to be abolished. According to *Commerce Reports*, several new methods of increasing the supply of American potash have been devised. One of these is a Canadian method for obtaining potash from ordinary feldspar. This consists in heating the feldspar with limestone and iron oxid at a temperature of about 2,200 F., producing a partly fused mass that is easily decomposed by a weak acid. From this product the potash salts can readily be extracted for further purification. It is said that 106 tons of potash are wasted daily by the twenty-five or more distilleries in this country that subject molasses to a process of fermentation. A New Orleans company has planned to install the process of saving the potash from distillery waste which was recently brought to attention by the United States Bureau of Foreign and Domestic Commerce. Experiments to extract potash from seaweed both in this country and in the Philippine Islands have been noted heretofore. It is stated that seaweed yields about 15 per cent. of potash.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

History of Surgery.—An interesting exhibit of books and pictures illustrating the history of surgery has been prepared by Dr. Arnold C. Klebs at the invitation of Lieut.-Col. Champe C. McCulloch, Jr., M. C., U. S. Army, librarian of the surgeon-general's office, and may now be seen in the Library Hall of the Army Medical Museum.

Eulogize General Sternberg.—At a meeting of the directors of the Washington Association for the Prevention of Tuberculosis, November 6, resolutions were drafted paying tribute to the unselfish character of General George M. Sternberg, late president of the association, to his valuable contributions to preventive medicine and to his personal philanthropic work.

Personal.—Dr. Philip Newton, who went to Russia in charge of a Red Cross unit, is said to have been appointed surgeon of the sixth army corps with the rank of general. ——Drs. Arthur M. Zinkhan and Paul H. Zinkhan, Washington, have returned after a years' service in the war zone.—— Dr. William C. Rives, Washington, has been elected president of the Citizen's Relief Association.——Dr. Thomas W. Jackson, Washington, who succeeded Dr. Richard P. Strong as head of the American Sanitary Commission in Serbia, has returned from abroad.

Honor Magruder.—The Medical Society of the District of Columbia held a meeting November 10 as a memorial to Dr. Ernest P. Magruder, formerly superintendent of the Emergency Hospital, Washington, who died from typhus fever in Serbia, April 9. The work done by Dr. Magruder in combating typhus was described by Dr. Ethan F. Butler, late director of Serbian Unit No. 2, of the American Red Cross, and tributes to Dr. Magruder were also paid by Major Robert U. Patterson, M. C., U. S. Army, medical director of the American Red Cross, and by Dr. George M. Kober, dean of Georgetown University.

ILLINOIS

Matteson School Closed.—The public school of Matteson was closed November 20 and ordered fumigated on account of diphtheria among the pupils.

New Hospital for Highland Park.—At a recent meeting of the board of commissioners of Highland Park a committee was appointed to take up the matter of a local hospital and to report at the next meeting.

Personal.—Dr. Marion C. Dale, McLeansboro, is reported to be seriously ill as the result of a cerebral hemorrhage. ——Drs. Grant Houston, Herbert S. Worthley, James A. Clyne and Philip Le Sage have been elected members of the medical staff of St. Joseph's Hospital, Joliet.

Hospital Addition Dedicated.—On November 17, the chapel and addition to St. Mary's Hospital, Streator, were dedicated by Father Shaunion, vicar general of the diocese of Peoria. After the dedicatory exercises the Sisters of St. Mary tendered a banquet to the physicians of Streator and its environs, over which Dr. Eley E. Perisho presided as toastmaster. The new addition, consisting of four floors and a basement, increases the capacity of the hospital to 125 patients.

Correction.—A statement was published in THE JOURNAL of November 6 regarding a scarlet fever epidemic in Decatur that the spread of the disease was due to a lack of cooperation on the part of local physicians. Dr. Herbert L. Wright, health officer, writes that this statement is incorrect and that he has observed no lack of cooperation, but that on the contrary, he has been requested by eight or ten local physicians to see suspicious cases with them and that their cooperation has been all that could be desired.

Chicago

Health Crusade Proclamation.—Mayor Thompson, on November 26, issued a proclamation designating December 10 as Children's Health Crusade Day.

Diphtheria.—A medical student living in Hitchcock Hall, University of Chicago, became ill with diphtheria November 24, after having been engaged in studying diphtheria germs.

The head of the department of bacteriology is making an investigation to ascertain whether there is any carrier among the students.

Personal.—Dr. Philip S. Chancellor, who went to Europe last May as medical director of the Chicago unit, sails from France on his return on December 25.——Dr. Arthur Dean Bevan, on November 27, was elected president of the Clinical Surgical Society at its meeting in Washington.——Dr. Gottlieb A. Lurie has reached France on his return home from Serbia.

First Aid Classes.—A first aid class is being held on Wednesday afternoons at the residence of Mrs. E. R. Cox, 1529 Astor Street, in charge of Dr. Charles Adams.——Mrs. Arthur A. Small has organized a class of women to become trained nurses and later to affiliate with the National Red Cross of America. The first meeting of the class took place at St. Joseph's Hospital, November 29.

Millions Needed for Health.—Health Commissioner Robertson estimates that his department should have $4,907,561 to spend in 1916. Of this little more than one-half is to be devoted to health, sanitation and hospital work and the remainder to the disposal of city wastes. For the entire department the appropriation for 1915 was $1,507,444 and for next year his estimate has been reduced to $1,356,461.

INDIANA

Schools Closed on Account of Disease.—The schools of Amboy, Miami County, have been closed on account of diphtheria.——The schools at North Grove, which had been closed on account of scarlet fever, have been reopened.

Personal.—Dr. George W. Willeford, Washington, started November 20 on an extensive trip through the west.——Dr. Henry C. Davisson, Hartford City, is reported to be seriously ill at his home.——Dr. and Mrs. Emanuel P. Masgana, Vincennes, have returned to France where Dr. Masgana will take service with the French Red Cross.

IOWA

Personal.—Dr. Fred W. Sallander, Fort Madison, has returned after two months in England.——Dr. Albertus J. Burge, formerly a member of the faculty of the University of Iowa, Iowa City, has been appointed surgeon to the new Catholic Hospital, Mason City, and will soon move to that place.——Fire at Hawleyville, November 8, destroyed the office of Dr. Jesse D. Elliott.

Smallpox.—At Fort Madison, November 18, it was reported that the smallpox epidemic was practically under control, there being about twenty cases in the city. City Health Officer Joseph M. Casey declared that the rapid spread of the disease was due to the lack of vaccination and the reporting of cases when they first appeared. A census of the public and parochial schools of the city showed approximately 1,200 children who had never been vaccinated.

Tuberculosis Notes.—The Free Dispensary for Tuberculosis Patients, established by the Visiting Nurses' Association, at 410 Century Building, Des Moines, was opened November 18. The clinic days will be Thursday and Saturday of each week and the association offers free examination and medical advice to those financially unable to pay.——The Iowa Association for the Prevention of Tuberculosis has recently been organized and on the organization committee are the following physicians: Drs. Murdoch Bannister, Ottumwa; Frank M. Fuller, Keokuk; John E. Luckey, Vinton; John H. Peck, Des Moines, and Herbert V. Scarborough, Oakdale.

KANSAS

Epidemic Diseases.—On account of the prevalence of diphtheria the Ingalls School, Kansas City, has been closed.——The prevalence of diphtheria has caused the closing of the public school at Dunkirk.——The schools of Little River are under rigid quarantine on account of the presence of several cases of diphtheria and scarlet fever.

Personal.—The Kansas Supreme Court has decided that Dr. Chilton W. McLaughlin, health commissioner of Kansas City, is entitled legally to his office under the civil service law and cannot be ousted because of a mistake made by the civil service commission.——Dr. Owen G. Hutchinson has been appointed city physician of Wichita, vice Dr. Leon Matassarin, removed.

Medical Department of State Library.—The state library at Topeka has nearly 1,300 volumes in its medical department and under the terms of the Stormont Endowment Fund several hundred dollars a year are spent for new medical books and under the Sheldon Endowment Fund, $100 a year for the same purpose. The library also receives about twenty medical magazines a month but the librarian states that there is no record of a physician having utilized this division of the library.

KENTUCKY

Eye, Ear, Nose and Throat Clinic Opened.—The Scott County Health and Welfare Association announces the opening of a clinic for the treatment of the eye, ear, nose and throat, to be in charge of Dr. Edward C. Barlow, Georgetown.

Babies in Pediatric Service.—Following a precedent established by the University of Minnesota, the University of Louisville has included in its pediatric service all newborn babies. As soon as the cord is cut the baby is transferred to the pediatric service.

Health Officer Closes School.—The development of six cases of diphtheria among the children attending the George Rogers Clark School, Crescent Hill, Louisville, caused Dr. W. Ed. Grant, Louisville, city health officer, to direct the closing of a portable structure which is used by a class of about forty of the younger pupils of the school.

Personal.—Dr. Arthur T. McCormack, Bowling Green, has been appointed a member of the Kentucky Conference of Charities and Corrections.——The office of Dr. Alvis P. Ryan, Albany, was destroyed by fire November 6, with a loss of $1,000.——Dr. Frederick P. Strother, Madisonville, has been elected vice president of the Hopkins County Public Health League.

Warning.—The board of the Jefferson County Tuberculosis Hospital has issued a warning to the public that imposters are soliciting funds for the Waverly Hills Sanatorium. These men have not yet been identified, but are salesmen of soap and toilet articles who claim that part of the receipts from the sale of their wares accure to the Waverly Hlils Sanatorium.

MASSACHUSETTS

Diphtheria Closes Schools.—The Lynhurst Primary and Grammer School, North Saugus, was closed from November 12 to November 28, because of an epidemic of diphtheria in that district.——The ninth grade of the Maple Street School, Danvers, was closed on advice of the board of health, November 18, on account of the prevalence of diphtheria.

Gives Hospital to Town.—Mr. and Mrs. Richard T. Crane, Jr., Chicago, have notified the Ipswich Society of their intention to give the town a hospital to be known as the Benjamin Stickney Cable Hospital in memory of their friend who was killed recently in an automobile accident. The building is to be of fire-proof construction and will have accommodation for eighteen patients.

Strong Lectures on Typhus.—Dr. Richard P. Strong, professor of tropical medicine at Harvard Medical School, made his first public lecture, November 20, on his experiences as head of the International Committee to combat typhus fever in Serbia.——On December 6, Drs. Charles A. Porter and Robert B. Osgood discussed the work of the physicians and nurses in their party during the past summer.

Personal.—Dr. William Hall Coon, Haverhill, state medical inspector for the northeastern health district, has resigned to assume new duties as medical officer with the Fisk Rubber Company at Springfield and Chicopee. Dr. Lyman A. Jones, North Adams, health officer of the Berkshire District, has been transferred to Haverhill to succeed Dr. Coon.——Dr. Mary T. V. Moore has been appointed a member of the staff of school physicians of Boston.

Value of Bacterial Vaccine in Typhoid Fever.—The Evans Memorial for Clinical Research, Boston, is desirous of communicating with as many physicians as possible who have used bacterial vaccine in the treatment of typhoid fever, that they may collect statistics regarding the efficiency or non-efficiency of this method as a therapeutic measure. Dr. Frank C. Richardson, clinical director, requests that any physician who has treated with the method will communicate with Dr. William H. Watters, 80 E. Concord Street, Boston, when blank forms will be sent that uniform reports may be made.

NEVADA

Personal.—Dr. Sidney K. Morrison, Reno, has resigned as physician of Washoe County.——Drs. Martin A. Robison and Henry Bergstein, both of Reno, have resigned from the City Board of Health.

Scarlet Fever.—November 9, a meeting of the mayors of Reno, Sparks and some other towns with the county com-

missioners and state and local boards of health was held to consider measures to prevent the spread of scarlet fever which was epidemic in the state. There had been some laxness in reporting cases to the local authorities and physicians were warned that such reports must be made in accordance with the quarantine laws of the state.

NEW YORK

A New Step in the Care and Cure of Insanity.—The State Hospital Commission announces that it has decided to establish additional mental dispensaries in connection with the state hospitals for the insane and will employ additional field agents.

Another Death from Anthrax Reported.—A death from anthrax has been reported from Endicott, the correctness of the diagnosis having been confirmed by the city bacteriologist of Binghamton. It is believed that the victim became infected in the Endicott tannery where he was employed.

Resolutions Regarding Dr. Trudeau.—The medical staff and patients of the Workmen's Circle Sanatorium, Liberty, have adopted resolutions regretting the death of Dr. Edward Livingston Trudeau, who had for thirty-one years worked untiringly and unselfishly in the interest of the consumptive workingmen and women, and expressing their appreciation of his work by conferring on the hospital building of the Workmen's Circle Sanatorium, the name "Trudeau."

New York City

Personal.—Dr. Cecile L. Greil was one of the survivors of the *Ancona*, sunk by a submarine in the Mediterranean. ——Dr. Luvia M. Willard, Jamaica, is the first woman to be appointed a member of the staff of the Jamaica Hospital. ——Dr. Edgar L. Gilcreest has returned from service with the American Red Cross in Europe.

Medical Society of the County of New York Elects.—At its one hundred and tenth annual meeting the Medical Society of the County of New York elected the following officers: president, Dr. Frederick E. Sondern; first vice president, Dr. J. Benton Squier, Jr.; second vice president, Dr. Charles H. Peck; secretary, Dr. John Van Doren Young; assistant secretary, Dr. Daniel S. Dougherty; treasurer, Dr. Charles H. Richardson; censors for two years, Drs. Howard C. Taylor, Willy Meyer and Floyd M. Crandall.

Plan for Great Medical Center Receives Setback.—Announcements have been made from time to time with regard to the project of consolidating the College of Physicians and Surgeons of Columbia University and the Presbyterian Hospital and some months ago an option was secured on the American League Baseball Grounds, a tract of land comprising 10½ acres, with the understanding that the university would contribute $1,000,000 when the time came to take up the option. The Presbyterian Hospital was to contribute a like amount. Columbia University has been unable to secure the amount of money required so that the purchase of this particular site will have to abandoned, but it is understood that the plan for consolidation has not been abandoned but has only received a setback.

PENNSYLVANIA

Society Donates Sterilizer.—The members of the Elwood City Medical Society have presented the Elwood City Hospital with a sterilizer for use in the operating room.

Rabies Patient Bites.—Under date of November 26 it was reported from Pittsburgh that a rabies patient who escaped from the Allegany General Hospital had bitten fourteen persons. Eleven of the victims were said to have been sent to the Mercy Hospital to undergo the Pasteur treatment. Among those bitten were Hospital Superintendent Herbert Beamer and four staff physicians. The patient was captured and returned to the hospital, where he died.

Philadelphia

Personal.—Dr. Edward H. Bedrossian has been appointed assistant medical inspector and Dr. Charles M. Strotz, assistant hospital physician at the Hospital for Contagious Diseases, and Dr. Frederick C. Chirinos, outdoor physician in the Bureau of Charities.

Correction Uplift.—The director of the Department of Public Safety has appointed an advisory board whose especial functions shall be the improvement of the housing and medical service in hospitals and other municipal institutions for the care of public charges. The staff includes: Drs. Ella B. Everitt, J. Leslie Davis, Charles H. Frazier, Elijah H. Siter, Thomas H. Fenton, T. H. Weisenburg, Horace Phillips, and James M. Anders.

Questionable Nurse Directories Here. Another Warning.—Physicians of Philadelphia and environs are again being circularized by so-called nurse directories. Ethical private homes or directories for registered and "experienced" nurses are known by their absence of preposterous claims but quite the contrary is true of the unscrupulous variety, those managed "for profit only" if not worse. The safe plan for practitioners is to rigidly avoid these trick concerns, and unless sure of the private nurse homes, to depend only on nurses from a recognized hospital or the Nurse Directory of the College of Physicians. The latter supplies "years of experience" attendants as well as registered trained nurses.

Hospital Contract Awarded.—The contract for the erection of New Misericordia Hospital, at 53d and Cedar Avenue, was awarded November 17. The building will be of the Italian Renaissance style of architecture and of fireproof construction. The main building will stand in the center of a big plot; will be 45 feet wide and 179 feet long. From the ends of the building will extend wings so arranged as to make every room an outside one, with plenty of air and sunlight. To the rear of the hospital will be a building to house the employees of the hospital and the mechanical plant. To the east will be the nurses' home and to the west the convent for the sisters. The second and third floors will be occupied by rooms and suites for private patients.

Aid for Drug Victims.—Acting under the suggestion of Francis Fisher Kane, United States District Attorney, a committee has been formed of well-known citizens of Philadelphia, headed by Edward W. Bok and C. H. Ludington, to employ and direct a skilled social worker to investigate and aid habitual users of narcotics, more especially those addicted to heroin, morphin and cocain. More than $1,000 has already been raised to be used in working out this drug problem. The committee is anxious to obtain at least $3,000 to defray the expense of the first year's work. It hopes to raise this sum before the United States District Court convenes on December 6, when more than eighty drug cases will be called for the court's consideration. Many of these persons are habitual users. The committee will not confine itself to cases referred to it by the Federal courts, but will take up recommendations made by the State courts and the various societies and agencies throughout the city, in an effort to effect a reform in any case that is deserving. The duty of the agent will be to investigate the facts, and when the case is not hopeless, follow up the individual, obtaining the necessary medical assistance and later, if needed, an opportunity of obtaining employment.

WISCONSIN

Dispensary Association Formed.—The Milwaukee Dispensary and Hospital Association, with a capital stock of $10,000, was incorporated, November 6, by Frederick Westwood, B. F. Muchecke and Eugene Shapf.

Sanatorium for Marathon County.—The county board of Marathon County decided by a vote of 44 to 19, November 10, to appropriate the sum of $35,000 for the construction and equipment of a county sanatorium for tuberculosis.

Inquiry Into Industrial Conditions.—Through the agency of the Wisconsin Industrial Commission, Surgeon-General Rupert Blue has assigned Surgeon Joseph W. Schereschewsky and P. A. Surg. Robert Olesen, U. S. P. H. S., to the Wisconsin field and they began their work in Milwaukee, November 15.

Sanatorium Dedicated.—At the dedication of Muirdale, the new Tuberculosis Sanatorium for Milwaukee County, November 19, Dr. Hoyt E. Dearholt, Milwaukee, presided, and addresses were made by Drs. Theodore B. Sachs, Chicago, and Louis F. Jermain, Milwaukee, president of the Wisconsin State Medical Society.

Personal.—Dr. Arthur J. Patek, Milwaukee, underwent an operation for appendicitis, November 12.——The state board of control announces that it has asked for the resignation of Dr. Norman F. Hoffman, superintendent of the State Tuberculosis Sanatorium, Wales.——Dr. Frank S. Wiley has been elected chief of staff of St. Agnes' Hospital, Fond du Lac. ——Dr. John D. McRae, Chippewa Falls, has been appointed physician for the Paint Creek Dam.

Antitoxin and Vaccines.—The health officer at Milwaukee is endeavoring to get through the city council an ordinance requiring the reporting to the health department of all sales of antitoxins and vaccines, and that the name of the person on whom the antitoxin or vaccine is to be used must be in the hands of the department within twenty-four hours. The object is to secure a more complete record of infectious dis-

eases. A fine is provided in the proposed ordinance for failure to make proper reports.

CANADA

Tuberculosis Diminishes in Ontario.—The reduction in the death rate from tuberculosis in Ontario continues, it having dropped to 85 persons per 100,000 of population. Eleven years ago the rate was 148 persons per 100,000.

Syphilis Spreads.—Dr. Charles K. Clarke, superintendent of the Toronto General Hospital, estimates from his weekly mental clinic that syphilis is spreading in Ontario. Heretofor general paralysis has been rare among children in Ontario, but it is now increasing. Dr. Clarke states he deals with thirty cases of mental defectives and imbeciles on the average each week at his clinic and that conditions are getting so serious that radical measures will soon have to be taken in that province.

Antityphoid Inoculation.—At the outbreak of the war the Board of Health of Ontario offered to supply free of charge to the Canadian government all the antityphoid vaccine required for Canadian troops, as well as for those sent from Newfoundland. This offer was accepted. All the vaccine has been manufactured in the laboratory of the Ontario Board of Health in Toronto. Excellent results have been achieved in the prevention of typhoid fever in the Canadian troops.

Diphtheria Antitoxin.—Prior to May, 1914, diphtheria antitoxin was not manufactured in Canada. The cost of this product, including other serums annually imported into Canada, was $120,000. In May, 1914, an arrangement was made with the University of Toronto whereby antitoxin is supplied to druggists and boards of health at a very much reduced cost. The cost of the product previously often prevented large doses. For example, in the year 1913 the death rate from diphtheria in Toronto, apart from the cases in the Isolation Hospital, was 16 per cent.; but where the dosage was large and prompt, 6 per cent. Nearly all the provinces of the Dominion now avail themselves of the product of the Ontario Board of Health.

Low Death Rate in War Hospitals.—Last month the Canadian hospital at Le Touquet, France, was removed to Outreau, near Boulogne, and Col. Adam T. Shillington, Ottawa, was given a week's absence in London. Colonel Shillington visited the new Ontario hospital being erected at Orpington, which will probably be opened in January. During the eleven months Colonel Shillington has been in command of the hospital at Le Touquet, more than 8,000 patients have been handled, only about 500 of whom were Canadians. The total deaths which occurred at that hospital in the eleven months have only been forty-four. Colonel Shillington estimates that the death rate in the field has been about 20 per cent. of those hit, and that the wounds of a large proportion of the soldiers are not of a serious nature. He says that the medical branch of the Canadian army has done splendid work. They have never been short of any supplies and no branch is doing its work better than the medical branch. He has been very much impressed with the way the women turned out to work in France.

Personal.—Dr. Kenneth D. Panton, Vancouver, B. C., who went to France with the first Canadian contingent, has been placed in charge of an ambulance section and given the rank of lieutenant-colonel.——Nothing has lately been heard in Ottawa of the Hon. Dr. Henri S. Beland, St. Joseph, Que., ex-postmastgr-general in the Laurier government. It is known that he is a prisoner in Germany, but recent inquiries, both through the British War Office and at Washington, have failed to elicit any information.——Col. Adam T. Shillington, Ottawa, formerly commanding No. 2 Stationary Hospital at Le Touquet, France, has been appointed assistant director of medical services at the Canadian camp in England. Major Henry C. S. Elliott, Cobourg, Ont., has been transferred from No. 2 Stationary to No. 2 Canadian General Hospital.——Col. Herbert S. Birkett, Montreal, officer commanding McGill University Base Hospital in France, has cabled to Montreal stating that the hospital is to be moved to another situation, but its destination was not mentioned.——Dr. Edmund P. Lewis, who has been acting as assistant superintendent of the Toronto General Hospital during the absence of Dr. Alfred K. Haywood at the front, has resigned his position to qualify for overseas service.

GENERAL

National Examination Day.—Wednesday, December 8, has been named by the various antituberculosis associations and also by the Life Extension Institute, as National Medical Examination Day, on which it is suggested that everyone undergo a physical examination with special reference to tuberculosis.

Red Cross Seal for Next Year.—As a means of stimulating originality of designs for the Red Cross Christmas seals for 1916, the American Red Cross has decided to conduct a competitive contest and to offer prizes taken from the expense fund set aside for the antituberculosis campaign. Five prizes will be given valued at $100, $50, $25, $15 and $10, respectively. Further particulars and specifications may be obtained by communicating with the American Red Cross, Washington, D. C. All designs submitted must be in the hands of the Red Cross not later than Feb. 1, 1916.

Interstate Society Organized.—The Montana-North Dakota Medical Society whose membership is composed of physicians of northwestern North Dakota and northeastern Montana, was organized at a meeting held in Williston, November 20, and the following officers were elected: president, Dr. Melverton E. Trainor, Stanley, N. D.; vice president, Dr. Edward J. Hagen, Williston, N. D.; secretary, Dr. Frank W. MacManus, Williston, N. D.; and directors, Drs. Loyd B. Dochterman, Williston, N. D., and James H. Drake, Mondak, Mont., and Dr. Frank O. Brigham, Stanley, N. D.

Deaths Abroad.—Henry Charlton Bastian, M.R.C.S., England, 1860; F.R.C.P., London, 1870; aged 78; a well-known English neurologist and biologist; a champion of the theory that life is a form of energy capable of spontaneous growth and author of several works advocating this theory; professor of pathologic anatomy and principles and practice of medicine and professor emeritus in University College, London; censor of the Royal College of Physicians and consulting physician to the National Hospital for the Paralysed and Epileptic, London; died at his home in Fairfield, Chesham Bois, Buckinghamshire, England, November 17.

States Guard School Sanitation.—Forty of the states of the union have taken legal action toward safeguarding the sanitation of public school buildings. In thirty-eight states there are legal requirements regarding the school site; in nineteen states the laws prohibit the location of the school building within a specified distance of houses where liquor is sold, or other disreputable resorts or factories; thirty states have taken up the regulation of the water supply of public schools and in thirty-six states some form of protection against fire and panic has been provided.

Tri-State Physicians Meet.—The thirty-second annual meeting of the Tri-State Medical Association of Mississippi, Arkansas and Tennessee was held in Memphis, November 16 to 18, under the presidency of Dr. William P. Hicks, Earl, Ark., and the following officers were elected: president, Dr. Arthur G. Hudson, Raines, Tenn.; vice presidents, Drs. Samuel D. Robinson, Clarksdale, Miss.; Robert E. Bradsher, Marmaduke, Ark., and John W. Morris, Somerville, Tenn.; secretary, Dr. James L. Andrews, Memphis (reelected), and treasurer, Dr. James A. Vaughan, Memphis (reelected).

Railway Surgeons Meetings.—The twenty-first annual convention of the Big Four Railway Surgeons' Association was held in Indianapolis, November 18, and the following officers were elected: president, Dr. Clayton W. Russell, Springfield, Ohio; vice presidents, Drs. S. H. Nelson, Cleveland; John T. Montgomery, Charleston, Ill.; and Austin S. McKitrick, Kenton, Ohio; and secretary-treasurer, Dr. Leonard A. Ensminger, Indianapolis.——At the fourth annual meeting of the Surgical Association of the Chicago and Alton Railroad Company held in Bloomington, Ill., November 19, Dr. William E. Guthrie, Bloomington, was elected president; Dr. H. Parrish, Vandalia, Ill., vice president; and Dr. Miles B. Titterington, St. Louis, secretary.

Personal.—Surgeon-General Rupert Blue, U. S. P. H. S., after a visit to the meeting of the Southern Medical Association at Dallas, inspected the quarantine station at New Orleans.——Asst. Surg. Gen. Henry R. Carter, U. S. P. H. S., who recently went to Porto Rico to investigate a fever supposed to be yellow fever, has been seriously ill with dengue but is now reported to be out of danger.——Dr. Ferdinand Shoemaker, assistant medical supervisor of the United States Indian Service, Washington, is making an inspection tour to isolated colonies of Indians who are in charge of L. D. Creel, special agent in Utah. The reason for this inspection is the recent appearance of trachoma among the Indians.

Impostor Swindling Physicians.—Physicians throughout the country have been victimized recently by an individual under various aliases. Complaints have come from Dr. Burnett W. Wright and Dr. Arthur McCormack of Bowling Green, Ky.,

that their names have been falsely used. The individual was confined in the county jail at Bowling Green on the charge of forgery. It is stated that since his release he has been making skilful pleas to physicians, securing money from them under false pretenses, referring among others, to Drs. Wright and McCormack. He is described as a slender person, with light sandy hair, small blue eyes, of good physique, rather pleasing address, and about 5 feet 7 inches in height. Any information concerning him should be forwarded at once to either of the above-mentioned physicians, who will take steps to have his activities stopped.

Bequests and Donations.—The following bequests and donations have recently been announced:

James Walker Memorial Hospital, Wilmington, N. C., an annex to be used as a maternity ward and hospital for infants and children, to cost about $30,000, as a memorial to their deceased daughter, by Mr. and Mrs. James Sprunt, Wilmington.

To found a free medical dispensary in Milwaukee, $300,000, by the will of Mrs. Antoinette A. Keenan.

Evanston Hospital Association, a tract of land valued at $15,000, by James A. Patten, Evanston.

Allegheny General Hospital, Pittsburgh, for the erection, equipment and endowment of a research laboratory at a cost of $400,000, donated by the children of the late William H. Singer, Pittsburgh, in his memory.

Grandview Hospital, Philadelphia, a donation of $25,000, by two Philadelphia manufacturers, and $1,000 from a New York business man, on condition that the hospital shall be so located as to provide the greatest convenience for and be accessory to the largest number of the population of the Sellersville-Perkasie-North Penn section of the city.

War Against Mosquitoes.—War against the mosquito colonies of New York, New Jersey and Connecticut has been declared. At a conference of experts representing the United States Public Health Service and the health departments of these three states, a committee of ten was appointed which will have power to draft the proposed legislation and to carry on an educational campaign against the mosquito under the direction of the Public Health Service. The committee consists of Dr. Haven Emerson, health commissioner of New York; Surgeon Charles P. Wernenbaker, U. S. P. H. S.; Dr. L. O. Howard, chief of the department of entomology of the Department of Agriculture; James T. B. Boles; Dr. Charles F. Bolduan, director of the Bureau of Public Health and Education of the New York Department of Health; John E. Weier, park commissioner of Queens County; Dr. Edward H. Codding, New Rochelle; Dr. Alvin W. Klein, health officer of Greenwich, Conn.; John T. Sprague, Stapleton, N. Y., and James L. Laidlaw.

Psychiatrists Meet.—A meeting of the Interstate Psychiatric Association was held on November 23, at the Sheppard and Enoch Pratt Hospital, Towson, Md. A constitution was adopted which specified that residents of the states of New Jersey, Pennsylvania, Maryland and Virginia and the District of Columbia, who were interested in neurology or psychiatry, were eligible to membership, and that physicians in other states might by vote of the association be elected to associate membership. The object of the association is to bring together men who are working in special institutions, in general hospitals, or are in private practice, and who are devoting special attention to the care and treatment of mental and nervous diseases. The following officers were elected to hold office for three years: president, Dr. Henry A. Cotton, medical director of the New Jersey State Hospital, Trenton; vice president, Dr. Edward N. Brush, superintendent of the Sheppard and Enoch Pratt Hospital, Towson, Md., and secretary, Dr. Samuel T. Orton, clinical director of the Pennsylvania Hospital, West Philadelphia. Meetings will be held twice yearly.

Tetanus Following Vaccination.—Recently there has been an epidemic of smallpox in Hammond, Ind., and in West Hammond, Ill. There have been between thirty-five and forty cases of smallpox in this vicinity during the last two months. A general voluntary vaccination followed the outbreak of the disease, and approximately 2,300 persons have been vaccinated since the recognition of the disease in the community. On November 23 a boy about 9 years old died of tetanus, and on November 26 a boy about 7 years old died from the same disease. The former had been vaccinated about seventeen days preceding the recognition of the first symptoms of tetanus; in the case of the second boy the time elapsed between the date of vaccination and the onset of the first symptoms is rather indefinite but was either fifteen or twenty-two days. The doubt exists owing to the fact that two series of vaccination were made on the children in the school which the boy attended. No other persons of those vaccinated have shown symptoms at the time of this writing, December 1. Both cases occurred in West Hammond, Ill. One patient was transferred to a hospital in Hammond, Ind., where he died. Thirteen hundred persons where vaccinated in West Hammond, Ill., the vaccinations all being made with vaccine points from the same source. The period which elapsed between the dates of vaccination and the development of the symptoms was at least fifteen days.

The Nobel Prize in Medicine.—According to cable despatches R. Bárány of Vienna has been selected as the recipient of the 1914 Nobel prize in medicine, as already mentioned, for his research on physiology and pathology of the cochlea and vestibule of the ear. One of his principal works was on the nervous disorders of the internal ear, published in Lewandowsky's "Manual of Neurology" in 1910, but his chief service to science has been in the line of topical diagnosis of cerebellar affections by means of internal ear disturbances. He is privat-docent of otology at the University of Vienna but has been a prisoner of war at Merw, in the Trans-Caspian district of Russia, since the fall of Przemysl. He is not yet 40; owing to a stiff knee he was not called to the colors but volunteered his services, and is said to have been busily pursuing his special research as long as opportunity offered in the care of the wounded. The latest news from him was to the effect that he had contracted malaria in his captivity.

This is the first Nobel prize in medicine to go to Austria. The other recipients have been Behring, Ross, Finsen, Pawlow, Koch, Cajal and Golgi, Laveran, Ehrlich and Metchnikoff, Carrel and Richet. Germany has thus received the price four times, and France three, and England, Denmark, the United States, Spain and Italy, Switzerland, Sweden, and Russia once each, unless Metchnikoff and Carrel should be credited to Russia and France respectively, instead of to Paris and New York where they reside.

The awarding of the Nobel prize in medicine for 1915 has been adjourned till 1916, and petitions have been received urging that the other prizes for 1914 be reserved in the same way till 1916.

FOREIGN

Distinguished Chemist Dies.—Raphael Meldola, eminent chemist of London, who discovered many new coal tar products and who has been for the last three years professor of organic chemistry in the University of London, died in London, November 16, aged 66.

WAR NOTES

Ambulance Donated.—Mrs. W. A. Velie, Moline, Ill., has donated an ambulance to be placed in the service of the American Red Cross in Europe.

Supplies for Harvard Unit.—The Surgical Dressings Committee has shipped ten cases of dressings consisting of sponges, cotton pads and bandages to France to be used by the Harvard Medical Unit. In addition the workers of the committee have threaded with black silk 1,000 needles, which, sterilized and carefully protected, will be delivered to Dr. Edward B. Towne to be used in brain surgery.

American Hospital Opened in Petrograd.—The American Hospital, Petrograd, was formally opened November 14. Hon. George T. Marye, American Ambassador, delivered the principal address and a portrait of Grand Duke Alexius was presented to the hospital by Russian friends. The institution was opened in 1914 with twenty beds and now has doubled its facilities.

Cesarean Section by Bomb Shell.—During the bombardment of Rheims the lying-in department of the public hospital was transferred to the cellars and the service went on without a break and without fatal infectious complications. Henrot reports that a new-born child, a fine specimen, was brought in alone and when he inquired for the mother learned that on the way to the maternity she had been killed by a shell which had torn open the abdomen and the child had only to be lifted out.

Appeal for Red Cross Contributions.—President Wilson, November 25, issued an appeal to the American public to increase their efforts to alleviate the suffering in the war area of Europe by liberal contributions. The American Red Cross thus far has received about $1,600,000 and has sent in the zone of war and maintained nearly 400 surgeons, nurses and sanitarians; has given financial aid to hospitals and other Red Cross institutes, and has purchased and transported nearly 4,000,000 pounds of hospital supplies and equipment. The resources of the American Red Cross are now reduced to less than $50,000 with which to reach the great demands of the approaching winter. Contributions may be forwarded

to any state or local headquarters of the American Red Cross or to the national headquarters, Washington, D. C.

The New Food Regulations in Germany.—The *Deutsche med. Wochenschrift* in commenting on the regulations which went into effect November 1, deplores the delay in official regulation of the food supply. "The authorities," it says, "have procrastinated from the first in this matter, notwithstanding the evil experiences of last year. The new regulations restrict the consumption of meat and lard. On Tuesdays and Fridays no meat, fresh or dried, and no meat dishes can be sold to consumers. On Mondays and Thursdays the restaurants and hotels, etc., are not to serve any kind of meat, game, poultry, fish or other dishes which are cooked with fat or bacon, and lard cannot be sold. On Saturdays no pork is to be sold to consumers. Abstention from meat and from the use of lard and other fats on the specified days has not been decreed for private households as it is expected that the well-to-do will voluntarily conform to the same restrictions. The aim of the decree is essentially to ensure the distribution to all in the most equitable manner of the supply of meat which in itself is ample. Circumstances may render it unnecessary to enforce these decrees after the consumption of meat has once been regulated. The census of domestic animals taken October 1 shows a gratifying increase in the stock of hogs. To prevent this restriction in regard to meat leading to extortionate prices for game and fish, and further to combat the excessive prices already demanded, the senate has empowered the imperial chancellor to establish maximum prices for fish and game at wholesale in the Berlin market, after conferring with experts. These wholesale rates are to prevail throughout the empire unless certain districts modify them to conform to local market conditions. When the settled prices have been thus established, communities with over 10,000 inhabitants are to set a maximum retail price. The senate has also empowered the chancellor to establish maximum prices to the producers for potatoes. These producers' prices range from 61 to 75 marks (27.5 to 33.5 marks —about 70 cents—per hundred pounds). All communities with more than 10,000 inhabitants are required to set a maximum retail price and other communities are empowered to do so. The maximum price charged by the producer in the same district as the potatoes are sold at retail must not surpass 1.3 mark. The wholesale price must be regulated according to local conditions. A decree provides further for the expropriation if need arises of all potato fields more than one hectare (about 2½ acres) in extent."

LONDON LETTER

LONDON, Nov. 12, 1915.

Serious Financial Position of the National Health Insurance Scheme

The difficulties of the working of the insurance act in consequence of its socialistic nature, which encourages extravagance, have been pointed out from time to time in previous letters. The government estimates have been exceeded in several directions with the usual result—an increased drain on the taxpayer. At the present moment the huge cost of the war, estimated at $25,000,000 a day, prevents any increased contribution from the state being entertained. The position is well described by Mr. Kingsley Wood, a member of the National Insurance Advisory Committee and vice chairman of the Faculty of Insurance, in an address given to that body. He said that the insurance scheme for the present year would cost nearly $125,000,000. The state would have to pay nearly $35,000,000, and employers and workers the balance. The cost of central administration by the respective commissions was officially estimated at nearly $2,500,000 and stationery, printing and office accommodation would cost nearly $1,500,000 more. The government actuaries' original estimates of the state subsidy for the current year seemed likely to be exceeded by $8,500,000. In spite of these huge commitments, many urgent financial questions have arisen. There is a large deficiency in connection with women insurers. Before the war, $2,500,000 had been set aside in an endeavor to meet the situation, but this amount had to be used for other purposes. The deficiency had since increased largely on account of the great influx of women workers as a result of the present labor conditions. If a parliamentary grant was impossible—and the present insurance minister had some time ago publicly stated that at the present time it would be futile to apply for extra grants—in certain societies the male members were liable to foot the bill, while in others the whole amount would have to be borne by women insurers alone. It was a wasteful policy to allow this matter to drift, and it was unfair to old and new compulsory insurers alike. It was well worth consideration whether it would not be better now to face either the raising of the contributions or the reduction of benefits. The state of the sanatorium funds also demanded attention. Certain insurance committees had long waiting lists of consumptive insurers—there were 200 in London, for instance—but committees perforce had to reduce the number of beds, while others were limiting the amount of extra nourishment for insured persons. Even the famous cod liver oil treatment was now threatened. Again, $25,000,000 a year was being paid for medical treatment. A case has been cited of a Scottish physician who had received, under the present system, $380 in respect to a solitary patient on his panel list, and who during the year had required no medical treatment. Many thousands of persons had not yet chosen a physician, and the shortage of physicians and drugs accentuates the problem. Advocates alike of a state medical service or of the old friendly society system of medical treatment have a case on the score of economy alone. The financial arrangements with pharmacists are also admittedly unsatisfactory. Some are overpaid, and others underpaid, and recourse is now advocated to the old system of stock mixtures. The whole administration of the act cries aloud for simplification. Persistent demands are being made for an immediate and impartial inquiry.

Failure of an Attempt to Charge a Physician for Extravagant Prescribing

Another example of the chaotic condition of the insurance act is the expenditure on drugs. From the fees of physicians having no direct interest in economy, there are powers to deduct expenditure which can be shown to be extravagant. The trouble often is to show this. Recently the insurance committee of the Borough of Leicester deducted $150 from a physician's account for this cause, but he succeeded in obtaining an injunction against them in the law courts. His case was that he ordered such drugs as were requisite. The pharmaceutical committee reported to the general committee that too many drugs had been ordered by the panel physicians, and that the drug fund was insufficient to pay for the drugs ordered. An arrangement was made by which $1,000 was transferred from the medical fund to the drug fund, and this sum was allocated among the physicians on the panel by calculating the average quantity ordered by each, and requiring each physician who had ordered drugs in excess of the average to make a contribution in proportion to his excess. For the physician in question the sum was $150. The judge granted an injunction against this deduction on the grounds that the pharmaceutical committee did not investigate the question of extravagance but simply made the deduction because there was a deficit in the drug fund.

Portuguese Help for the British Wounded

Portugal is arranging hospital accommodation for wounded from the Dardanelles and from Serbia. Seven spas have been selected as suitable for the reception of our wounded. The government has offered to make structural alterations of any buildings offered by private generosity in order to fit them for hospital purposes. Hotels, sanatoriums and hospitals are being inspected in order to determine their suitability for such conversion. In addition to this, it has been proposed in the Portuguese parliament that all the public sanatoriums and grounds in the island of Madeira be handed over to the British Red Cross for the duration of the war, and that there shall be a suspension of import duties on all necessary stores and supplies. These generous proposals emphasize the traditional amity between Portugal and this country.

PARIS LETTER

PARIS, Nov. 4, 1915.

Death of Professor Bouchard

Dr. Bouchard, formerly professor of general pathology and therapeutics at the Faculté de médecine de Paris, has just died after a long illness, at Lyons, aged 78. In 1879, he became professor of general pathology and therapeutics. He was elected a member of the Académie de médecine in 1886 and a member of the Académie des sciences in 1887. He became president of the latter academy as well as of the Société de biologie.

In Professor Bouchard disappears one of the great figures of French medicine. He was both a laboratory man and a clinician. Bouchard published a large number of works on anatomy, physiology, pathology, clinical medicine, medical

chemistry and the history of medicine. He is known especially for his theory of diseases due to retardation of nutrition, his works on autointoxication, etc. In 1882 he published a "Treatise on Diseases of Nutrition," in 1892 a work on "Pathogenic Microbes," and he edited an important "Treatise on General Pathology," in five volumes, containing the work of several of his pupils. He was also editor of the *Journal de physiologie et de pathologie générale*.

Bouchard was not very popular with the medical profession. This was due, in part, to the fact that certain of his ideas, especially on the subject of the reform of the *agrégation* were not in favor and in part to the fact that he was of too authoritative a temperament to be popular.

The War

MALINGERING IN THE ARMY

At a recent session of the Société de chirurgie de Paris, Dr. Hartmann, professor of the surgical clinic in the Faculté de médecine de Paris and surgeon of the hospitals, reported some observations made by Dr. Reynès of Marseilles on several cases of phlegmon caused by injections of gasoline under the skin. The characteristic of these phlegmons, according to Reynès, is the appearance of the line of incision, which shows tissues thickened, hardened and board-like, alternating with somewhat softened, purulent points; also bands of reddish, inflammatory fungositics alternating with yellowish zones of disintegrating tissues. In other cases there is a mixture of acute phlegmon and eschar. Finally the wound exhales an unmistakable odor of gasoline, which may last for several days.

Professor Pozzi with Dr. Agasse-Lafont has observed a case of this kind. These phlegmons have a large number of differential characteristics which may be classed in the order of their importance as follows: (1) suspicious clinical symptoms such as absence of ecchymosis and grumous appearance of pus, which contains fragments of slough tissues; (2) signs showing the caustic and nonmicrobic origin of the suppuration (sterile pus unless there was contamination at the time of puncture or a secondary infection after the incision); (3) chemical signs which determine the diagnosis. One reservation should be made, however. The possibility should be kept in mind that the patient may have used for therapeutic purposes a liniment or external application, for in some cases the external use of turpentine oil may produce real phlegmons.

At a recent session of the Réunion médicale de VI-e armée, Drs. Natalelli and Henri Roger, professor of experimental and comparative pathology at the Faculté de médecine de Paris and physician of the hospitals, read an interesting paper on erythema of the face produced to simulate erysipelas. In an erysipelas service they observed, from February to June, eleven cases of erythema of the face characterized by bloating and a diffuse redness of the skin, generally less intense than in erysipelas and without peripheral swelling and by vesicles of the size of a pinhead, much smaller than the erysipelatous phlyctenae and situated as much toward the periphery and outside as in the center of the swelling. These vesicles dry rapidly, producing fine yellowish crusts of a smaller size and of shorter duration than those of eczema of the face. These erythemas are localized especially on the cheeks, forehead, submaxillary and mastoidian regions and more rarely on the nose. They are rarely accompanied by any rise in temperature or by any disturbances of the general condition. They reach their height almost at once and, if they are carefully watched, recover in a few days without any treatment. They are caused, as a few malingerers have finally confessed, by friction of the face with a rubefacient or vesicant substance, especially with a chapsia or so-called deadly carrot. Besides these sufficiently characteristic clinical data, the suspected antecedents of the subject may aid in the diagnosis, as in a case in which convalescent leave had been refused after an attack of diphtheria. As soon as punishments or threats of punishment were employed the number of cases diminished greatly.

THE FLARING UP OF LATENT INFECTION IN WOUNDS OF WAR DISTURBED BY SURGERY

A paper by Dr. Phocas gave rise to an interesting discussion on this subject during two sessions of the Société de chirurgie de Paris. After a very insignificant traumatism as well as after a major operation, infection may flare up, apparently without external cause, in a wound which appears to have recovered from the original infection. Such cases of auto-infection, which have sometimes been explained as due to latent germs, have become in recent years almost negligible in current surgical practice. They have again become a practical question in connection with wounds of war, after which they are often observed. Wounds which are granulated and no longer produce a rise of temperature again begin to cause fever on being made to bleed. A knee wound which had been drained for a long time no longer caused fever; the evening after the drains were disturbed the fever appeared. An old traumatic osteomyelitis after surgical operation became lit up again with an erysipelatous eruption and pyocyanic pus. A patient who had a limb amputated for gaseous gangrene and a reamputation performed at the end of two months on a chronically suppurating stump had another severe attack of gaseous gangrene to which he succumbed.

These facts have considerable importance. One is compelled to admit reinoculation from germs which doubtless are imprisoned and latent in the tissues, but which suddenly make irruption into the circulation after a surgical operation. These reinfections have this characteristic: They become more serious than the original infection, they suggest increased virulence, a more favorable soil, a mass inoculation and perhaps also other unknown factors of which anaphylaxis may give us a comparative idea.

Dr. Bazy, surgeon of the hospitals of Paris, thinks that what characterizes latent infection is the reproduction of the same complications under the influence of the same or analogous conditions. This is not true of at least one of the cases reported by Phocas. Bazy had previously performed an operation on a patient for a limited gangrene of the leg probably due to a ligature of the femoral artery in its lower portion. After a reamputation performed by Phocas the patient succumbed to a fulminating gaseous gangrene. When, after an operation, one observes infectious complications it is wiser, more reasonable and more practical to look to one's self, one's assistant, one's instrument, dressing, etc., for the cause rather than to the patient.

Dr. Phocas replied that it is equally possible that gaseous gangrene at the outset may have assumed a benign form, especially since gaseous gangrene does not seem to be so distinct a pathologic entity that it cannot take both benign and serious forms.

Dr. Pierre Delbet, professor of clinical surgery at the Faculté de médecine de Paris considers absolutely erroneous Bazy's assumption that a latent infection can be postulated only if the secondary manifestations are like the original ones. Germs of the same species may produce very different manifestations. Phocas has done well to call attention anew to such facts, for it is quite certain that we are exposed at present to special danger from latent infections. Secondary operations on patients after complete cicatrization, especially operations on the bones, give rise to manifestations to which we have not been accustomed.

Professor Quénu observed a soldier in whom the first two phalanxes of a finger had been destroyed three weeks previously. The wound was in excellent condition. The finger was amputated and the operation was followed by cicatrization by first intention, but tetanic complications developed, at first without fever, and finally caused the death of the patient.

Dr. Tuffier, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, performed, under operative conditions which left nothing to be desired, a great number of reamputations of stumps which had once suppurated but which had been cicatrized for several months. He was convinced by repeated evidence that there exist in the depths of these stumps infectious agents capable of being reactivated by a new operation and capable of producing serious results. In one case gas developed under suture.

Dr. Chaput, surgeon of the hospitals of Paris, has also observed several cases of lighting up of previous infections by surgical operations. Accordingly, especially in alcoholics who have had attacks of erysipelas, he is very sparing with secondary operations.

Dr. Delbet declared that he was not surprised at the case of tetanus observed by Quénu. He had at the time in his service two patients who had had tetanus infection in their wounds. He gave them, from time to time, injections of tetanus antitoxin and they have up to the present presented no symptoms of tetanus but it is very possible that after recovery there may be tetanus bacilli in their tissues (it is known how resistant this bacillus is in its sporulated form) and a later operation might possibly cause operative tetanus.

Dr. Schwartz, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, saw a few months ago a patient who had ankylosis of the shoulder after fracture of the articulation by a projectile. The joint had been mobilized and the patient was attacked with tetanus, which seemed to be due to latent infection and which took on a chronic form.

GLOVES FOR USE IN ROENTGEN-RAY WORK

Dr. Mauclaire, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, showed the Société de chirurgie de Paris some gloves which are very pliable and are impermeable to Roentgen rays. The solution, which is easily removed with benzine, is composed as follows:

Solution of caoutchouc	50 gm.
Benzine	50 gm.
Lead carbonate	100 gm.

The gloves, after receiving four coats of this solution on their inner side, are sterilized by being placed for an hour in alcohol. This does not alter the coating.

MASKS FOR PROTECTION AGAINST ASPHYXIATING GASES

There are for sale numerous forms of apparatus for protection against asphyxiating gases which are offered to the public without any official control. In the interests of the soldiers, the minister of war has decided that it shall be strictly forbidden for families to send such apparatus to soldiers and that the packages containing them shall be returned to the senders.

BERLIN LETTER

BERLIN, Oct. 26, 1915.

Feeding Prisoners of War

The feeding of the large number of prisoners of war has been the source of much worry for those in charge of military affairs. The drill fields which it had been proposed to use for prison camps were being used by the volunteers. Therefore, many thousands of prisoners had to be sent to any available open field, which was hurriedly converted into a camp. Tents and buildings were especially provided for shelter, and food of every sort was supplied, as well as primitive cooking facilities. Contractors were found who were willing to feed the prisoners for 60 pfennige (15 cents) per day, exclusive of bread. The authorities accepted this bid because their time and attention were taken up with other affairs. Naturally, these contracting caterers were not aware of the particular demands that might be made by the many different nationalities found among these prisoners; hence, it is easily understood that, in spite of the efforts made by the German war authorities, complaints of every sort were made. In the course of a few months these complaints became much louder and much more numerous, mainly, however, because the number of prisoners was increasing. This led to a thorough investigation and a resulting regulation of the whole question.

Professor Backhaus, referee for the "feeding of prisoners," appointed by the ministry of war, investigated the matter and published his results in the *Hamburgischen medizinischen Ueberseeheften*. His report shows clearly that the criticisms made were at variance. Some maintained that the prisoners had not been fed enough, whereas others, equally insistent, claimed that they were being fed too much, that food was being taken from the civil population as well as from the German troops and given to the prisoners, and that the public treasury was being depleted thereby. It was also said that many of the contracting caterers were enjoying huge profits. On the other hand, it must be admitted that in many prison camps no fault could be found with the care given the prisoners.

After the number of prisoners had exceeded a million, that is, more than the full strength of the army in time of peace, the Prussian ministry of war, aided by the war ministers of Bavaria, Saxony and Wurtemberg, undertook to regulate the matter. A normal feeding basis was laid down to take the place of the rules previously made, calling for sufficient nourishment or for three meals a day. This normal feeding basis was made effective for all prison camps, for those supplied by contracting caterers as well as those looked after by the government itself. In view of the fact that because of the war Germany was importing 28 per cent. less albumin and 42 per cent. less fat, a saving had to be made in these two food elements. The total diet called for consisted of 2,700 calories; that is, 85 gm. of albumin, 40 gm. of fat and 475 gm. of carbohydrates, the latter a quantity somewhat larger than that given as normal. It will be noted that the total quantity as well as the nutritional value of this menu is somewhat lower than the normal physiologic requirements of an adult man engaged in light labor. It was found, however, that this diet was sufficient for the prisoner after he had recuperated somewhat from the strenuosity of the campaign. Such prisoners as were engaged in physical labor received a 10 per cent. increase on this diet. It was taken for granted that in no case could the work done be considered hard labor. Such prisoners as were doing hard labor were receiving pay for it, and to them could be extended the privilege of enlarging on this diet by purchases made at the post store.

Besides laying down this so-called normal diet or menu, cognizance was taken of the fact that proper and suitable combinations of foods were required. To encourage the scientific construction of a menu, and also for the purpose of controlling the proposed plan through a central authority, those in charge of the prison camps were required to submit regularly to the war ministry, for investigation and approval, menus for the succeeding month. The first time such lists were submitted, many errors were discovered such as poor combinations of foods and improper division of the food elements for the various meals, unnecessary foods and tasteless combinations of foods. Gradually these menus improved. An investigation of 300 menus leads to the conclusion not only that the prisoner of war is being fed properly, but also that food is not being wasted. Furthermore, it is shown by these menus that in spite of the high prices of food, the organization in charge of the feeding of these prisoners has been able to reduce the cost from 60 pfennige (15 cents) to 52.2 pfennige (13.5 cents) per day, exclusive of bread.

In some prison camps the nationality and the individuality of the prisoners must be considered in constructing the menu. Experience has shown that it is impossible to provide a menu that will please both the Russian and the Frenchman. These "national" differences must be taken into consideration, and finally also whether the prisoner is well nourished or not, sick or well, working or idle, how he is housed and how he is clothed. The humanitarian and the economic aspect of this matter also had to be considered. Two things had to be kept in mind: first of all, to conserve such foods of which there was a shortage in Germany or which were needed for the troops or the civil population and therefore had to be diverted first to these channels, and second, to keep the cost within certain limits. It was found that it was cheaper and better for the government to feed these prisoners than to deal with contractors. Therefore, all contracts were abrogated. The principal difficulty was to secure the right people to place in charge of this work. To meet this exigency, two courses, each of a week's duration, were given in Frankfort-on-the-Oder and Darmstadt for kitchen subalterns, and during the week of June 22-25, a course was given in Berlin for commissary stewards. The lectures delivered during these courses and the description of excursions made were published, constituting a comprehensive review of the subject of the feeding of prisoners. As stated above, it was necessary to consider what kinds of foods were available and the prices at which they could be obtained. This, naturally, excluded many foods. Of much greater importance than variety was the nutritional value of these foods. Investigation brought to light many curious conditions. It was thought that there was a scarcity of foods because the prices had been increased. Investigation showed, however, that enormous quantities of several foods were being kept off the market by speculators who were endeavoring to raise the prices. These deposits of food were attached by the authorities and placed on the market at normal prices. This also had its influence on other food substances. The dealers sold food in large quantities at prices which, though lower than before, still gave them a good profit.

The smaller, more isolated prison camps also made complaint at this time because of the difficulty of securing certain raw materials. The war ministry was compelled to establish a central market or depot where the most important staple foods for the use of these prison camps could be housed. Although only a short time has elapsed since these depots were established, it can be stated that the German Empire is saving 100,000 marks ($25,000) daily because it is able to supply the necessary food substances at from 15 to 20 per cent. less than formerly. At the same time the quality of these foods is under absolute control and only suitable foods are distributed.

Marriages

ABRAM LEE VAN METER, M.D., Roxbury, Boston, to Miss Elva Von MacFarlin of Parsons, Kan., at Brookline, Mass., November 10.

JOHN CHRISTOPHER WOODLAND, M.D., Jessups, Md., to Miss Margaret Stewart Owings, at Sparrows Point, Md., November 17.

KNOX EMERSON MILLER, M.D., Washington, D.C., to Miss Noxie Bliss Miller of Berksville, Ky., October 29.

MARVIN SPEARS WHITE, M.D., Hamilton, Ala., to Miss Annie Mae Long of Tupelo, Miss., November 22.

CHARLES WILLIAM HENNEY, M.D., to Miss Margaret Elizabeth Tirney, both of Portage, Wis., October 26.

HERBERT HANDY HOWARD, M.D., to Miss Ruby G. White, both of Somerville, Boston, November 10.

JAMES WEIR ROBINSON, M.D., to Miss Mary Herbert Howe, both of Philadelphia, November 20.

Deaths

Hon. Walter Humphries Montague, M.D. University of Victoria College, Coburg, Ont., 1882; L.R.C.P. Edinburgh, 1882; aged 56; for several years a practitioner at Dunville, Ont.; for fifteen years a member of the Canadian Parliament from Ontario; a member of the Privy Council without portfolio in 1894 and a year later minister of agriculture; who removed to Winnipeg, Manitoba, in 1908 and there became a member of the Executive Council of the Province and later minister of public works; died in his apartments in the Royal Alexandra Hotel, Winnipeg, from cerebral hemorrhage, November 13.

Thomas Ayars Jones, M.D. New York University, New York City, 1880; aged 65; a Fellow of the American Medical Association, and president of the Luzerne County Medical Society in 1885; local surgeon at Ashley, Pa., for the Central Railroad of New Jersey, Wilkes-Barre-Wyoming Valley Traction Company and Lehigh and Wilkes-Barre Coal Company; one of the best-known practitioners of the Wyoming Valley; died at his home in Ashley, November 10, from heart disease.

Oswald Wayne Smith, M.D. Washington University, St. Louis, 1902; aged 39; formerly superintendent of the Washington University Hospital and Dispensary, and the O'Fallon Dispensary, and assistant registrar of his alma mater; later superintendent of the St. Louis City Hospital and then called to the superintendency of Harper Hospital, Detroit; an acknowledged expert on hospital management; died at his home in Detroit, November 12, from cerebral hemorrhage.

Charles Granville Stone, M.D. University of Maryland, Baltimore, 1872; aged 69; a member of the Medical Association of the District of Columbia; formerly a dentist; from 1896 to 1908 chief surgeon of the Washington Railway and Electric Company; surgeon to the Baltimore and Ohio Railway Company Relief Association and a director of the Casualty Hospital; died in his apartment in Washington, November 11, from the effects of a nervous breakdown.

Grace Wolcott, M.D. Women's Medical College of Pennsylvania, Philadelphia, 1884; aged 57; a Fellow of the American Medical Association and a member of the council of the Massachusetts Medical Society; consulting physician to the Trinity Dispensary and one of the founders and senior physician to the Vincent Memorial Hospital, Boston; who established an occupational camp for nervous patients at Heath, Mass.; died in that place, November 9.

Samuel Garland Slaughter, M.D. New York University, New York City, 1883; aged 54; a member of the Medical Society of Virginia; physician and surgeon to the Marshall Lodge Home and Retreat, Lynchburg, Va.; surgeon of the Lynchburg Home Guard and assistant surgeon to the Norfolk and Western Railroad; died at his home in Lynchburg, November 17, from the effects of Roentgen-ray burns received several years before.

Francis L. Galt, M.D. University of Pennsylvania, Philadelphia, 1854; aged 83; assistant surgeon in the United States Navy and later surgeon in the Confederate Navy during the Civil War and on duty on the the cruiser *Alabama;* a member of the party headed by Admiral Tucker which first explored the headwaters of the Amazon River for the Peruvian Government; died at his home, Woodside, near Upperville, Va., November 17.

Rush Wilmot Kimball, M.D. Long Island College Hospital, Brooklyn, 1890; aged 53; a Fellow of the American Medical Association; visiting physician to the W. W. Backus Hospital, Norwich, Conn., and physician to the Rock Nook Children's Home; one of the most prominent physicians of Eastern Connecticut; medical examiner of New London County; died at his home in Norwich, November 15, from angina pectoris.

Tiffin J. Shackleford, M.D. College of Physicians and Surgeons, Baltimore, 1882; aged 60; a Fellow of the American Medical Association; president of the Indiana Thirteenth District Medical Association in 1913 and formerly president of the Kosciusko County Medical Society; formerly health commissioner of Warsaw, Ind., and Kosciusko County; died at his home in Warsaw, November 17, from cerebral hemorrhage.

William Virgil Newsom, M.D. College of Physicians and Surgeons, Baltimore, 1887; aged 67; a member of the Florida Medical Association and for several years president of the Marion County Medical Association; local surgeon at Ocala, Fla., for the Seaboard Air Line Railway; visiting physician and director of the Marion County Hospital; died at his home in Ocala, November 11.

Robert Emmett Austin, M.D. Missouri Medical College, St. Louis, 1897; aged 43; a Fellow of the American Medical Association; surgeon of the Tenth U. S. Cavalry during the Spanish-American War with service in Cuba; for nine years a resident and roentgenologist of San Diego, and once president of the City Board of Health; died at his home November 13, from septicemia.

Richard Harrington Ashby, M.D. Cooper Medical College, San Francisco, 1886; aged 54; formerly a Fellow of the American Medical Association and a surgeon in the British Service; a member of the Medical Society of the State of California; died at his home in Roseville, Calif., November 16, from heart disease.

Robert Harold Mitchell, M.D. University of Pennsylvania, Philadelphia, 1898; aged 41; a Fellow of the American Medical Association and a member of the gynecologic staff of the Lucy Brinkley Hospital, Memphis, Tenn.; surgeon to the Juvenile Court and visiting physician to the Home for Incurables; died at his home in Memphis, November 14, from heart disease.

Katherine McIlheny Kollock, M.D. Women's Medical College of Pennsylvania, Philadelphia, 1887; aged 70; a Fellow of the American Medical Association; at whose suggestion the Philadelphia Board of Education instituted the present system of medical inspection of students in the High School for Girls in 1893; for thirteen years supervisor of inspection in that school; died at her home in Philadelphia, November 17.

Jasper Moss Wells, M.D. Eclectic Medical Institute, Cincinnati, 1877; aged 69; formerly a member of the Kentucky State Medical Association; for many years county clerk of Lewis County, Ky., and for thirty-seven years a practitioner of Vanceburg, Ky.; died at his home in Vanceburg, October 27, from intestinal obstruction.

Major Albert Veeder, M.D. University of Buffalo, N.Y., 1883; aged 67; a member of the Medical Society of the State of New York and said to have been the first to demonstrate the transmission of typhoid fever by the fly; a veteran of the Spanish-American War; died at his home in Lyons, N. Y., November 16.

Valentine Browne, M.D. New York University, New York City, 1875; aged 83; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; consulting physician to St. Joseph's Hospital; died at his home in Yonkers, N. Y., November 19, from angina pectoris.

James Madison Wood, M.D. Columbus (Ohio) Medical College, 1879; aged 62; a member of the Ohio State Medical Association; for many years a druggist and postmaster of Larue and later a practitioner of Hepburn, Ohio; died at his home near Hepburn, November 11, from carcinoma of the stomach.

John William Morris, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1902; aged 39; a member of the Oklahoma State Medical Association and vice president of the Sequoyah County Medical Society; died at his home in Sallisaw, Okla., September 30, from lobar pneumonia.

William Edward Warner, M.D. Western Reserve University, Cleveland, Ohio, 1881; aged 58; a Fellow of the American Medical Association; formerly of Aberdeen, S. D.; a member of the Board of Health and quarantine physician of Spanish Fork, Utah, died at his home in that place, November 20.

W. H. H. Woland (license, Ohio, 1896); aged 74; for forty-four years a practitioner of Sandusky County, Ohio; for twenty years in practice at Lindsey, and for the same length of time at Fremont, Ohio; died at his home in the latter city, November 17, from cerebral hemorrhage.

Anna Groff Smith, M.D. University of Michigan, Ann Arbor, 1892; aged 54; a Fellow of the American Medical Association; for twenty-three years a practitioner of the East Side, Toledo, Ohio; died in Flower Hospital, Toledo, November 15, two days after a surgical operation.

Marion Elizabeth Blackman, M.D. University of Michigan, Ann Arbor, 1909; aged 37; a member of the Medical Society of the State of New York, and a member of the staff of the Rochester, N. Y., State Hospital; died in Buffalo, September 3, from interstitial nephritis.

Thomas A. Wasson, M.D. Homeopathic Hospital College, Cleveland, 1886; aged 61; a member of the Medical Society of the State of New York, and health officer for the township and village of Elizabethtown, N. Y.; died at his home in Elizabethtown, November 12, from endocarditis.

William Henry Shields, M.D. New York Homeopathic Medical College, New York City, 1910; aged 41; a practitioner of Astoria, L. I., up to three weeks before his death, when he moved to Ogdensburg, N. Y.; died at his home in that city, October 24, from heart disease.

Samuel Newell Hamilton, M.D. Indiana Medical College, Indianapolis, 1875; aged 70; a Fellow of the American Medical Association; a veteran of the Civil War; once coroner of Fayette County, Ind.; died at his home in Connersville, Ind., November 18, from heart disease.

Uriah Campbell Jones, M.D. Drake University, Des Moines, Iowa, 1885; a member of the Iowa State Medical Society; aged 72; a veteran of the Civil War; a well-known practitioner and druggist of Breda, Iowa; died at his home in Breda, November 5, from carcinoma.

Terrell L. Fuller, M.D. Eclectic Medical Institute, Cincinnati, 1911; aged 27; formerly of Mayfield, Ky., but later on duty in a government hospital at Oroyo, Peru, South America; died in that place, November 3.

Willis W. Brown, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1891; a member of the Oklahoma State Medical Association; died at his home in Cameron, Okla., about November 5, from pneumonia.

John A. Reese, M.D. Medico-Chirurgical College of Philadelphia, 1883; aged 65; of Philadelphia; was struck by an automobile while crossing a street, November 11, and died at his home from his injuries.

Emmett Daniel Boaz, M.D. University of Virginia, Charlottesville, 1877; New York University, New York City, 1878; aged 60; of Covesville, Va.; died suddenly, November 8, while driving near Covesville.

John Morgan, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1867; aged more than 70; for more than half a century a resident of Neosho Falls, Kan.; died in Spokane, Wash., about November 6.

Maximilian Broening, M.D. New York University, New York City, 1868; aged 75; formerly secretary of the Clinton County (Ill.) Medical Society; died at his home in Carlyle, Ill., November 3.

John R. Papin, M.D. Missouri College, St. Louis, 1878; aged 58; for many years a practitioner of St. Louis; died in St. John's Hospital, St. Louis, November 11, from rheumatism.

George W. Delo, aged 91; for many years a practitioner of Missouri, but who retired more than forty years ago; died at his home in Springfield, Mo., October 25, from senile debility.

John H. Hammond, M.D. Hahnemann Medical College, Chicago, 1887; aged 55; died at his home in Anderson, Ind., November 12, from cerebral hemorrhage.

James Marshall Lewis, M.D. Vanderbilt University, Nashville, Tenn., 1887; aged 51; of Birmingham, Ala.; died in an infirmary in that city, November 6.

Harvey J. Ault (license, Arkansas, 1903); aged 58; died at his home in Pinnacle, Ark., about November 1.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

PROPRIETARY DIGITALIS PREPARATIONS

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following expression of its views. W. A. PUCKNER, Secretary.

It is becoming increasingly apparent that the tincture of digitalis produces the full therapeutic effects of digitalis, and that when it is properly made it is as stable as any liquid preparation of digitalis now available; and that the tincture has the systemic side actions of digitalis, including the emetic, in no greater degree than the various proprietary preparations of this drug to be found on the market.

While in itself the market price of a valuable therapeutic agent is of comparatively little moment, the fact remains that the high price at which many of the proprietary preparations of digitalis are sold — often 100 times that of an equivalent amount of the drug — serves as a constant stimulus to the exploitation of these with extravagant claims, and it is commonly sought to enhance their reputation by exaggerating the disadvantages of the official drug and its preparations.

The Council especially emphasizes the fact that this statement is not intended to lessen the efforts that are being made to find new and better preparations of digitalis; its protest is against the deliberate misrepresentations of those manufacturers who seek to magnify the difficulties in the use of digitalis, by therapeutic exaggeration on the one hand, and by an exaggeration of the side actions of digitalis and the instability of its preparations on the other.

Strophanthin and crystalline ouabain are now available in sterile solution in ampules, and afford a convenient means of promptly securing the cardiac action by intramuscular or intravenous injection.

DR. PIERCE'S PLEASANT PELLETS

"Dr. Pierce's Pleasant Pellets" are made by the World's Dispensary Medical Association, Buffalo, the same concern that exploits "Pierce's Golden Medical Discovery," "Pierce's Favorite Prescription," "Pierce's Compound Extract of Smartweed," etc. The Pierce nostrums are advertised under the shibboleth, common to the "patent medicine" maker, that their products contain only vegetable ingredients. Pierce's Pleasant Pellets are recommended to the public on the claim that:

> "Being entirely vegetable in composition, these pellets operate without disturbance to the system, diet or occupation."

Elsewhere in the same advertising leaflet the public is warned against "harsh drastic pills, composed, as most of them are, of jalap, aloes, scammony, croton oil, gamboge and elaterium"—all of them, it should be noted, products of the vegetable kingdom. Some day, possibly, the public will learn that some of the most deadly poisons known to science are "purely vegetable"; when that time comes the "patent medicine" makers will probably discard the "vegetable" talking point!

No longer is the direct claim made—at least in the trade package, which is subject to federal regulation—that "Dr. Pierce's Pleasant Pellets Cure Constipation." In common with a great deal of the "patent medicine" advertising of today, the direct falsehood of the former Pierce claims has given place to the inferential falsehood. The advertising of one Pierce nostrum is used for the purpose of exploiting another. Thus the leaflet that accompanies the trade package of Pierce's Pleasant Pellets recommends the "pellets" for "suppressed menstruation"—from "taking cold"—coupled with the use of a hot sitz bath—and a "full dose of Dr.

Pierce's Compound Extract of Smartweed." The Smartweed nostrum, by the way, according to labels in our files, contains, in addition to 40 per cent. alcohol, eight tenths of a grain of opium to the fluid ounce. The "Pleasant Pellets" are also recommended in "very obstinate cases of Tetter, Salt-Rheum, Erysipelas, Eczema, Boils, Carbuncles, Scrofula, and Eruptions caused by Infectious Blood Poisons"—in connection with "Golden Medical Discovery."

"Pierce's Pleasant Purgative Pellets" were examined in the Association's laboratory, and while no exhaustive work was done, the chemists reported:

"After removal of the coating, the inner pill responded to tests for emodin and aloin. Alkaloids, mercury or phenolphthalein were not found. Whether or not other emodin-bearing drugs besides aloin were present was not determined. Essentially, Pierce's Pleasant Purgative Pellets appear to be an ordinary laxative pill."

That the active principle of aloes was found in the pills is of interest in view of the fact, already referred to, that the leaflet advertising Pierce's Pleasant Pellets warns the public against the use of purgatives composed of aloes.

Correspondence

The Case of the Bollinger Baby

To the Editor:—As Commissioner of Health of the City of Chicago I gave testimony before the coroner's jury on the subject of the right of the Bollinger baby to live.

I fear that some of the published expressions have been hastily uttered and not as the result of mature judgment. All of those who have expressed themselves have been laboring under the impression that this baby was so mentally and physically defective that were it given an opportunity to live it would become a charge on its parents and later, perhaps, on the community, and those who spoke favoring the judgment of Dr. Haiselden believed that on account of the alleged mental and physical defects it had forfeited its right to live.

When I visited the German-American Hospital eight hours before this baby died and made an examination of it and viewed the Roentgen-ray pictures, I was startled to observe that this was not the defective baby that I had expected to see. At that time the baby was dying as the result of intestinal obstruction.

The defects were an imperforate anus, a deficiency in the skin around the shoulder and neck and the absence of the right external ear. The right kidney was fused with the left and connected with the bladder by one ureter. (The bladder was full of urine which was easily expressed through the urethra.) There was also absence of the coccyx. There was nothing to indicate that this child would have been mentally defective except that which would come from the absence of the sense of hearing on the right side.

The defect that caused the death of the child was an imperforate anus, the rectum extending down to within one-half inch of the outside. The making of an artificial opening was the "simple operation" which was spoken of so frequently in the press which might have saved the baby's life. In this connection I desire to state that this operation is not quite so simple as people have been led to believe and the results are not always satisfactory.

These being the facts in this particular case, a question of tremendous importance is at once raised as to whether the right of any child to live should rest wholly on the judgment of any physician. I do not want to be understood as questioning the right of any physician to act as his conscience or judgment in any particular case would dictate, and to operate or not operate in accordance therewith.

But at the same time, the life of every child should be so safeguarded by the community that it would not have to depend on the judgment of any one physician.

If we are going to depart from the recognized duty of the physician to save life regardless of what that life shall be afterward, then the state must provide some tribunal similar to that of ancient Sparta, which questioned the right of every child to live until it had been passed on by such a tribunal. Were this case to be made a precedent for future action by the physicians of our land it might lead to the loss of many valuable lives.

> Ages long will tell the story old
> Of triumphs wrought unending
> By humans and things once held as naught.

Then, again, we must remember that it would open up the way to criminal neglect. I do not believe that anybody will argue that a human life is comparable with that of the lower animals, and, while I favor eugenics so far as it tends toward the betterment of the race, no human life should ever be considered on the same basis as that of the lower animals.

The command "Thou shalt not kill," either by the sins of omission or commission, is embodied in our statutes as well as in our religion, and should never be abandoned as a fundamental principle on which to stand. And while it is true that mental and physical defectives have been a burden on society and will continue to be such, who can say that the love and care bestowed on these defectives have not enriched the minds and hearts of those who have worked with and for these unfortunates, so that in the end the world is repaid for all the trouble they have caused us?

The civic conscience of a community is an indication of the height to which its civilization has attained, and this is nowhere more manifest than in the way in which it cares for its mental and physical defectives.

The safeguards of human life must not be torn down; they have been none too strong in the past, and the case under discussion should not be used to make them any weaker.

JOHN DILL ROBERTSON, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

POISONING FROM PRESERVED CORN

To the Editor:—On a recent morning a woman, who was enjoying at least fair health, opened some preserved corn. The package was one of three jars of the ordinary Mason type. The first and second jars were evidently bad and were discarded at once. The woman tasted of the third jar, which appeared to be a good one. It was after tasting the second or third mouthful that she decided it was no good. She did not put it on the table, and forbade any one else in the family to taste it. The contents of the three jars were thrown to the chickens, of which forty out of forty-two died after eating the corn. On the afternoon of the same day the woman complained of slight headache. The next day she took a laxative pill, and another pill was taken at night. She had some diarrhea, and the next morning felt a tightening at her throat. This continued and acted like a paralysis up to the time of her death. The bowel distress was not marked at any time. She seemed to have complete gastro-intestinal paralysis at the time of death.

What was the cause of death? Is there any literature bearing on this point? In what way did the corn, or what elements in the corn—good or bad—could have caused her death?

LEON W. HYDE, M.D., Hillsboro, Ore.

ANSWER.—Assuming that the corn in question was free from poison introduced from without, such as metallic and other poisons, there is only one reasonable explanation of the occurrence related in this instance, namely, that it concerns an instance of food poisoning from canned corn, the poisons having been produced by micro-organisms in the corn. It is possible also that the organisms in the corn may have been infectious for human beings and animals. In the chapter on food poisoning (Modern Medicine, Ed. 1, 1907, i, 223) Novy points out that the same micro-organisms that cause meat to be poisonous may produce exactly the same effects when they are introduced into vegetable food. He describes the poisoning of twenty-one persons who ate of bean salad; eleven of these persons died. The beans when opened had a peculiar odor, but showed no marked decomposition. The symptoms came on from twenty-four to thirty-six hours after eating. Novy also cites the instance of poisoning from oatmeal described by Ohlmacher. There

have recently been reported several epidemics of botulism from eating home-canned beans, home-canned pears and home-canned apricots. This subject has recently been discussed by Dickson (Botulism an Experimental Study, THE JOURNAL, Aug. 7, 1915, p. 492). The symptoms described by Dr. Hyde in this case suggest botulism. They are not of such a character, however, as to allow a specific deduction as to the particular form of poisoning that took place. The fact that so many chickens died and that the one human being who ate of the corn also died points directly to the corn as the source of the fatal agent, but, of course, the exact nature of the agent could not be determined without bacteriologic and other examinations.

NOSE-IONS

To the Editor:—The enclosed circular regarding "Nose-Ions" is one of many. Have you any data regarding it? Claims are extraordinary.
P. M. FOSHAY, M.D., Montclair, N. J.

To the Editor:—I should be glad of some information about the claims made by the Nose-Ions Company, New York.
DAVID W. WELLS, M.D., Boston.

ANSWER.—These notes of inquiry were referred to the Association laboratory for a reply. In answer the laboratory reported:

"Nose-Ions circular matter referred to is a crude attempt to impose on a scientifically trained profession with pseudo-scientific patter about ions, ionic dissociation and the positive and negative charges of ions. The only intimation regarding the composition of Nose-Ions is found in a small circular wrapped around a sample package. Here it is stated that 'Nose-Ions is composed of chemically pure Na-ions of sodium chloride, Camphor and Menthol, combined with the base, Vaseline.'

"Were the matter deserving of scientific consideration it would be interesting to inquire just how the positive sodium ion was separated from the negative chlorin ion of sodium chlorid, and how the sodium ion was kept in the ionized condition while isolated. But since every positive ion exists, as such, only along with a companion negative ion, such inquiry is superfluous.

"A qualitative examination was made. From this examination it appears that Nose-Ions is essentially an ointment consisting of a petrolatum base containing some odorous principles such as camphor, menthol and eucalyptus with some salicylic acid, and some quinin, probably in the form of sulphate. 'Sodium ions,' if present at all, are present in traces only."

CHRISTIAN SCIENTISTS AND DEATH CERTIFICATES

To the Editor:—Please publish the names of the states in which Christian Science practitioners are authorized by law to sign death certificates.
J. W. R.

ANSWER.—There is no state in which Christian Scientists are specifically authorized to sign death certificates. In a few states the law may, by implication, authorize this indirectly. For example, in Maryland, Christian Scientists are regarded as practicing medicine when treating for pay, and hence would be considered as physicians and as authorized to sign death certificates as such. See *Bandel* v. *Health Department*, 193 N. Y. 133; 85 N. E. 1067. The amendment to the Ohio medical practice act for 1915 included Christian Scientists, but they are regarded as limited practitioners and not physicians. They could not be permitted to sign death certificates under this construction. Most states specifically exempt Christian Scientists from the application of the medical practice act. In these states, Christian Scientists could not sign death certificates.

DIPHTHERIA AND THE BURNING OF LEAVES

To the Editor:—The idea is prevalent in this and some surrounding towns that the burning of leaves in the fall is responsible for outbreaks of diphtheria. A few physicians are making the same claim. The assertion seems absurd to me. Is there any foundation for it?
W. H. HENRY, M.D., Hamden, Ohio.

ANSWER.—There appears to be an old superstition to the effect that the burning of leaves in the fall causes diphtheria. This superstition is probably based on the rise in the diphtheria morbidity which occurs during the fall season. The only basis for this belief would be an increased irritation in the throat which might appear coincident with the inhalation of the pungent smoke. Of course, to ascribe a direct etiology to burning leaves in diphtheria is absurd.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 11, 1916. Sec., Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, Jan. 4, 1916. Sec., Dr. Harry C. DeVighne, Juneau.

ARIZONA: Phoenix, Jan. 4-5, 1916. Sec., Dr. John Wix Thomas, National Bank of Arizona Bldg., Phoenix.

CALIFORNIA: Los Angeles, December 14, and Sacramento, Jan. 11, 1916. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

COLORADO: Denver, Jan. 4, 1916. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DELAWARE: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

DISTRICT OF COLUMBIA: Washington, Jan. 10, 1916. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

FLORIDA: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

INDIANA: Indianapolis, Jan. 10, 1916. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

KENTUCKY: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

MARYLAND: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 13-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

MINNESOTA: Minneapolis, Jan. 4-7, 1916. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

NEW HAMPSHIRE: Concord, December 20-21. Sec., Dr. W. T. Crosby, The Beacon, Manchester.

NORTH DAKOTA: Grand Forks, Jan. 4-7, 1916, Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

OKLAHOMA: Oklahoma City, Jan. 11-12, 1916. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.

OREGON: Portland, Jan. 4, 1916. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

RHODE ISLAND: Providence, Jan. 6-7, 1916. Sec., Dr. Gardner T. Swarts, Providence.

SOUTH DAKOTA: Pierre, Jan. 11, 1916. Sec., Dr. P. B. Jenkins, Waubay.

UTAH: Salt Lake City, Jan. 3, 1916. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

VIRGINIA: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

WASHINGTON: Walla Walla, Jan. 4, 1916. Sec., C. N. Suttner, Baker Bldg., Walla Walla.

WISCONSIN: Madison, Jan. 11, 1916. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

Idaho October Report

Dr. Charles A. Dettman, secretary of the Idaho State Board of Medical Examiners, reports the practical and written examination held at Wallace, Oct. 5-7, 1915. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 7, all of whom passed. Two candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Kansas Medical College, Topeka		(1913)	83
Tufts College Medical School		(1907)	80
Columbia University, College of Phys. and Surgs.		(1905)	88
Cleveland College of Physicians and Surgeons		(1898)	82
Medical College of Ohio		(1893)	75
University of Pennsylvania		(1914)	91
University of Virginia		(1897)	84

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Gross Medical College		(1902)	Utah
Jefferson Medical College		(1914)	Utah

Vermont July Report

Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the written examination held at Burlington, July 1-3, 1915. The total number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 27, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Harvard University		(1915)	86.1
Temple University		(1915)	87.2
University of Vermont	(1894) 85.2; (1904) 91.7; (1915) 76.2, 77.7, 77.7, 82.3, 82.9, 83.7, 84.4, 84.4, 84.6, 84.8, 84.8, 85, 85.8, 86.1, 86.4, 86.6, 86.9, 87, 87.1, 87.2, 87.9, 88.8, 90.5.		

Book Notices

THE GOLD-HEADED CANE. By William Macmichael, M.D. With an Introduction by Sir William Osler, B.A., M.D., F.R.C.S., and a Preface by Francis R. Packard, M.D. Cloth. Price, $3 net. Pp. 261, with 21 illustrations. New York: Paul B. Hoeber, 1915.

The coming of the holiday season is marked by the publication of a number of books especially prepared to serve as gifts or remembrances for physicians. The history of medicine and the biographies of great physicians are becoming of increasing interest to the medical profession. Among such is that delightful biographical phantasy "The Gold-Headed Cane." It is an autobiography supposedly written by a gold headed cane carried successively by Radcliffe, Mead, Askew, Pitcairn and Baillie, and presented by Dr. Baillie's widow to Sir Henry Halford, who in turn presented it to the College of Physicians of London. An introduction to the present issue of the book written by Sir William Osler calls attention to the fact that this year marks the two hundredth anniversary of the death of Radcliffe, and gives a short appreciation of the biographies contained in the book. The note by Dr. Packard is a short history of the book and its author. This edition has been prepared in a decorative binding and follows the style and illustrations of the second edition.

OPHTHALMOSCOPIC DIAGNOSIS FOR GENERAL PRACTITIONERS AND STUDENTS. By George W. Jean, A.B., M.D., Instructor in Ophthalmology, in the School of Ophthalmology of the New York Eye and Ear Infirmary. Cloth. Price, $1. Pp. 123, with 68 illustrations. New York: E. B. Meyerowitz, 1915.

The methods of ophthalmoscopic examination and the various pathologic appearances of the fundus are briefly described and profusely illustrated in this book. So far as black and white wood cuts can be of value, those used are as good as any found in the average textbook; but any attempts to illustrate the fundus of the eye, unless reproduced in the natural colors, are apt to be misleading. The beginner, for whom this book is particularly interesting, is liable to receive wrong impressions if he depends too much on the illustrations. For example, the illustration of retinal hemorrhages might be mistaken for deposits of black pigment, or even for retinitis pigmentosa; the illustration of glioma gives absolutely no clue to the striking appearance seen in this condition, and the difference between the clear-cut white spots of an old choroiditis and the yellowish-white appearance of recent exudates is not clearly defined. The pathology and treatment of certain conditions are merely mentioned.

OBSTETRICS. Edited by Joseph B. DeLee, A.M., M.D., Professor of Obstetrics, Northwestern University Medical School, with the Collaboration of Herbert M. Stowe, M.D. Practical Medicine Series. Cloth. Price, $1.25. Pp. 230, with illustrations. Chicago: Year Book Publishers, 1915.

The volume on obstetrics is one of the best representatives of this useful series, which gives a résumé of a year's progress in medicine. The editors of this volume evidently spent considerable time in the selection of abstracts and in their consideration. Practically every page contains a few notes from the editors, calling attention to fallacies or important points in the various articles which are considered. The following is an example of the practical nature of these comments. It refers to Abderhalden's test in the diagnosis of pregnancy:

> From this maze of opinions what are we to decide? I believe that, like other blood serum tests, Abderhalden's has only relative value—though this particular one is very high. It requires very careful laboratory technique and many precautions or the result is open to question. In deciding in a given case it would be a little risky to attach absolute certainty to it, yet it is very valuable in the differential diagnosis.

Of particular interest are the sections devoted to puerperal sepsis and "twilight sleep."

Exercise in Nervous Disorders.—As a prophylactic against nervous disorders, the value of exercise can hardly be overestimated. Brain workers are better for moderate exercise, but do not need much; and after 25, severe intellectual work can rarely be done by persons in athletic training.—Dana.

Medicolegal

Requirements in Attending Childbirths—Regular Physicians as Witnesses Against Others—Nonexpert Evidence as to Treatment

(Yard vs. Gibbons (Kan.), 149 Pac. R. 422)

The Supreme Court of Kansas affirms a judgment for $2,418 damages in this action for malpractice in the treatment of the plaintiff in a case of childbirth. The court holds that the petition, in which the plaintiff alleged, in substance, that the defendant was employed as a physician to care for her in her confinement, and that he negligently produced a premature delivery, causing a laceration, and also failed to advise her of her condition and to carefully and skilfully treat her after the birth of her child, by all of which she was severely injured, stated a single cause of action. It was not necessary to treat the negligence of the defendant before and after the birth of the child as separate causes of action, any more than to have treated his neglect at each call or visit as separate causes of action. There was a single employment, and any failure to treat the plaintiff with due skill and care during that period, whether before or after the birth of the child, afforded but one cause of action. A physician employed in an obstetric case is required to care for and aid the patient, not only during her confinement and the delivery of the child, but it is his duty to make a careful examination of the patient and give reasonable and proper attention to any lacerations or injuries resulting from the delivery, and if he fails in this respect or to inform the patient or those caring for her as to her condition, or to give them instructions so that they may act intelligently in the further care and treatment of the patient, he is guilty of negligence and liable for the resulting injuries.

Nor does the court think that because the defendant was an osteopath there was any error in physicians of the regular school having been permitted to testify as to the progress and condition of labor in an obstetric case, the methods of delivery, and the proper treatment of the mother after the birth of the child. It is true that, where a physician or surgeon is charged with malpractice, his treatment and advice are to be tested by the standards of the school to which he belongs. But where there is practical uniformity in the rules of practice and treatment, regular practitioners of any school are competent witnesses as to the proper diagnosis and treatment of a given case; or where a person, who holds himself out as a medical expert or healer, has no fixed rules of practice, he is still bound to treat patients with ordinary and reasonable skill and care, and competent physicians, regularly engaged in practice, are competent witnesses as to whether the treatment administered in the case was properly or negligently performed.

Ordinarily only physicians and surgeons of skill and experience are competent to testify as to whether a patient has been treated or an operation performed with a reasonable degree of skill and care, but testimony as to many matters connected with the treatment of a patient, such as the statements of the physician or surgeon, as well as the external appearances and manifest conditions, which are observable by any one, may be given by nonexpert witnesses. However, the mere fact that the witness, who was the plaintiff's mother, spoke to the defendant about attending her daughter, or performed some other friendly act in that regard, would not make her subsequent statements competent against the plaintiff, for whom the service was performed.

An instruction is approved which told the jury, among other things, that the defendant could not be heard to charge the plaintiff with contributory negligence in not having proper attention given to her injuries, if the jury believed from the evidence that, by the exercise of reasonable diligence he could and should have informed himself of the nature and extent of her injuries, and that he negligently left her in ignorance of their extent or seriousness, or he led her to believe a surgical operation unnecessary.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Iowa, Dec. 17-18.

NATIONAL ASSOCIATION FOR THE STUDY OF PELLAGRA

Third Triennial Meeting, held at Columbia, S. C., Oct. 21-22, 1915

The President, C. H. LAVINDER, in the Chair

The Prevalence of Pellagra: Its Possible Relation to the Rise in the Cost of Food

MR. EDGAR SYDENSTRICKER, Washington, D. C.: Published in *Public Health Reports*, Oct. 22, 1915, p. 3132, and commented on in "Studies of Pellagra," editorial, THE JOURNAL, Nov. 20, 1915, p. 1818.

DISCUSSION

DR. J. F. SILER, Washington, D. C.: The speaker has emphasized the fact that the income of cotton mill families in the South is 20 per cent. lower than that of families in New England mills: $820 per annum in the South, against $1,000 in New England. If analyzed, this difference is, to a great degree, apparent rather than real. When the winters of South Carolina are contrasted with those of New England, we can realize that an appreciable proportion of the 20 per cent. difference in annual income must be expended for coal and extra clothing. Living conditions are in other respects quite different. The monthly rental for tenements amounts only to from $1.50 to $3 in the South. In a few mills investigated by us in the South there were no rental charges for tenements. Rents in the New England mill districts are much higher. In the South frequently street car fares do not enter into the problem. The open season is much longer than in New England, and a large proportion of families have gardens from which vegetables are grown which are available from May to late fall. These factors should be considered before we attempt to draw any sweeping conclusions relative to differences in the wage scale. It is my belief that the cotton mill operative in the South is, after all, in about as good condition economically as the New England operative. Bureau of Labor statistics showed that for the five-year period 1907-1912, the wage rate for mill workers had increased only 5 per cent. In the Spartanburg district our investigations show that the average increase between 1900 and 1914 must have been about 50 per cent. In March, 1904, in one mill the average daily wage of spinners in one room was 37 cents. February, 1911, the average daily wage in this room had increased to 86 cents per day. In September, 1914, the average daily wage in the spinning room had again increased from 86 to 99 cents. These figures show that the average daily wage in 1914 was almost three times that in 1904. The productive capacity had doubled in the ten-year period, and the rate of pay had increased, while the working hours had decreased from eleven to ten per day. The wage for day labor was about 75 cents in 1900, while in 1914 it had advanced to from $1.10 to $1.20. Most operatives, however, are "piece" workers, and averaged in 1914 between $1.25 and $1.50, and some of the more efficient $2 and even $2.50 per day. In 1900, children were paid from 25 to 40 cents per day. In 1914, children from 12 to 14 years of age earned from 60 to 75 cents a day, and those from 14 to 16 usually earned from 90 cents to $1 a day. The trend in wages from 1900 to 1914 has been steadily upward. Whether or not the increase in wages has kept pace with the increase in food prices is open to argument. I feel that they get about as much for their money now as fifteen years ago. It was unusual with us to find a village in which less than 30 per cent. of the families owned their own milch cows; usually the proportion ranged from 40 to 60 per cent.

There is no doubt that the people in these villages have an excess of carbohydrates in their diet, and the amount of fresh meat consumed should be increased. Most of them are fond of hog products, which enter quite extensively into their dietary during the hog killing season, December to March. Within the past six or eight years most of the company stores have added a meat market to their equipment. In some villages fresh meat is on sale daily, and in most of them daily from September to April. The income of a cotton mill family in the Spartanburg district ranges from $40 to $175 per month, the average being between $60 and $75. We were unable to convince ourselves that pellagra had any particular predilection for families with the minimum incomes, and we encountered it with about equal frequency in families with a monthly income of $50 and those of from $90 to $150.

DR. GEORGE C. MIZELL, Atlanta, Ga.: There was a time in the South when economic conditions were very much worse than now. In 1891 and 1892, a great many suffered from want of food, but the diet of Southern people is a great deal better today than ever before. Others besides the inhabitants of mill villages have pellagra. I practice and do much investigating in mill villages, and except for the fact that there are more people in very ordinary than in well-to-do circumstances, I cannot see any difference in the incidence of pellagra, so far as the money-earning power of the family is concerned. In the suburbs of Atlanta we have many mills of which the wages are very low. It is a fact that in recent years pellagra has greatly diminished in those villages, as Griffin, Ga., where there is a high-class mill, the people are paid well and are looked after from every standpoint, both morally and physically, and pellagra has not diminished there so far as I can determine by inquiry throughout the village, without taking complete figures. Cold storage and canned meats have undergone deterioration before they reach the consumer. They bring about a condition which I think plays a part in the production of pellagra. Mr. Sydenstricker states that there is a greater consumption of lard in the South than in the North, according to population. I do not believe these are facts. I should like to ask him when he says "lard" if he does not mean lard and lard substitutes.

MR. EDGAR SYDENSTRICKER, Washington, D. C.: The statistics which I used are based on several actual investigations, not of the rural population, but of workingmen's families in the South and in other sections of the country. These investigations were made in 1901 and 1909, and also in 1907 and 1908. They cover generally the Southern states, and they cannot account for any specific variation in any particular locality. By "lard" is meant the amount of lard used in the workingman's family during the year, whether used in cooking or for any other purpose. The same is true of meats and everything else included in the list of articles of food, so far as accurate statistics could be obtained. The kinds of lard included in the data are simply classed as "lard" by the authorities who made the investigations. Nearly all of the investigations, however, were made before lard substitutes of the kind mentioned came into common use.

The wages statistics were not taken from any one factory, but from a large number of localities and mills all over the United States. They show that there has been an increase of not over 25 per cent. in the wage rates in the period from 1900 to 1913, while in many industries and instances there has been an increase of less than 5 per cent. since 1907 and 1908 in the South.

The statistics of retail food prices regularly secured by the same authority show that there has been a 60 per cent. increase in the average of prices since 1900. Between 1890 and 1900 there was an actual decrease in retail food prices for several years, and the level was practically the same in 1900 as it was in 1890. There was a fairly rapid increase in food prices from 1900 to 1907, but a very much more rapid increase after 1907 up to about the present time. The statistics were secured regularly from a large number of retail stores in over forty different localities, and are for foods ordinarily sold to workingmen and their families.

No data have been gathered in the South or from any other section, so far as I know, showing the substitution of vegetable protein foods for animal proteins.

I do not think we ought to try to draw too definite a conclusion for any specific locality from general statistics, or too general a conclusion from specific instances or localities. What we need at this stage of our study of this phase of the question are definite data relating to the actual food supply of a given community and the character of the diet toward which the actual diet of the wage-earning family is tending, whatever may be the causes or the governing conditions.

(To be continued)

SOUTHERN MEDICAL ASSOCIATION

Ninth Annual Meeting, held at Dallas, Texas, Nov. 8-11, 1915

The President, DR. OSCAR DOWLING, Shreveport, in the Chair

SYMPOSIUM ON PELLAGRA

Report of Committee on Prevention and Treatment of Pellagra

DR. H. LESLIE MOORE, Dallas, Texas: We have come to the conclusion that the ideas advanced by Dr. Joseph Goldberger of the U. S. Public Health Service are the most plausible, and that his is probably the only theory that has come anywhere near being proved. Nearly all cases of pellagra occur in persons who are not able to get the best nourishing food. Very few cases occur in the well-to-do. Dr. Goldberger observed that in certain orphanages in Mississippi in which there were probably 200 cases of pellagra, after an additional diet was prescribed, only one case recurred the following spring. He concludes that pellagra can be prevented by appropriate diet without any change in environment, whether it be hygienic or sanitary. In other words, there was no change made in the environment in any of these cases except the addition of the diet. No attention was paid to the sanitary condition.

Report of Committee from the State at Large

DR. W. L. ALLISON, Fort Worth, Texas: Pellagra has spread rapidly through the South since 1907, until now each of the Southern States can number its cases by tens of thousands. While it is true that in Europe the disease was largely among the poorer classes, this does not hold true in this country, and especially is it not true in Texas. We have no such poor in Texas as are found in Italy, and the disease is frequently found here among the well-to-do. We have every reason to believe that the disease is not directly contagious. It is a significant fact that with few exceptions, nurses and doctors handling these cases in the various institutions in which pellagra is treated have not contracted the disease. As in many other diseases, a low diet and a lowered resistance seem to be predisposing factors. That the disease is purely a dietary one is advocated by many, but this theory will not account for all the cases, nor will it explain its sudden incidence and rapid increase in this country. Many persons have developed the disease with whose diet no fault could be found. Corn as a dietary factor seems to be losing favor. The occasional failure of mild cases to respond promptly to a well-balanced diet would seem to discredit any dietary theory. The theory of Alessandrini and Scala that "pellagra is nothing more than a mineral acidosis," due to an excess of silica or alumina in the water, has met little favor and does not seem to be supported by facts. That the disease may be an infection seems to be gaining favor and has much to support it. The Thompson-McFadden Pellagra Commission points to the significant fact that no new cases developed in those mill villages having a water carriage sewerage system. This commission also reports that close connection with a previous case existed in 80 per cent. of their cases. There is nothing to show that the disease is hereditary. Morphin habitués seem fairly susceptible. The incubation period of the disease seems to be from two to six weeks. All animal inoculation experiments have been negative, with possibly one or two exceptions. The greater prevalence of the disease among women between the ages of 20 and 45 makes it appear that the causative agent is to be found about the home in the daytime. The symptoms of the disease are all in the nature of an intoxication more or less chronic in its course. When the disease first appeared in this country, 67 per cent. of the patients died, while today probably of these 80 per cent. get permanently well. The prognosis for complete recovery diminishes with age, being very unfavorable in old age, although even the old recover. In view of the rapid increase of pellagra, more attention should be paid to the prophylactic treatment. Everything should be done to improve the sanitary and hygienic conditions about the home. A well balanced and nourishing diet will do much to increase the individual resistance and prevent the disease, even if it be of infectious origin. A sanitary water carriage sewerage system is certainly a step in the right direction. Active treatment of a case of pellagra should be begun by placing the patient in bed for at least a few weeks, depending on the severity and progress of the case. This of itself lessens the force of most diseases and conserves body energy. Hydrochloric acid should always be supplied where it is diminished or absent. Of the many remedies, thymol, quinin hydrobromid, picric acid and the arsenical preparations, especially sodium cacodylate, are apparently the most popular.

Pellagra in Texas

DR. K. H. BEALL, Fort Worth, Texas: The state government has done very little to check the ravages of this new enemy. Last year this disease killed 500 of our citizens and made invalids of many thousand more. Statistics show that women are much more frequently attacked with the disease when of certain age than men of certain age, or when they become much less resistant to its ravages.

Drugs in Pellagra

DR. W. T. WILSON, Navasota, Texas: Up to Nov. 1, 1915, I treated 190 cases of pellagra, and I have data on 310 cases treated by other physicians. Of this number thirty-five patients died, of whom fourteen were reported as having been treated with picric acid; ten were terminal cases and of the typhoid type, and the patients died within fourteen days after treatment was begun; four had tuberculosis associated with pellagra. Two had nephritis complicating. Thirty-seven with severe mental symptoms are reported recovered. My report is not complete on the number of patients improved or not improved. I failed to ask for these data, but from conversation with many physicians I do not think the percentage in either case will exceed 7 per cent., if it even runs that high. The disease does not become very serious before the middle of May. Most of the thirty-five deaths reported occurred during the months of July, August and September. In pellagra of recent origin, picric acid is of no value, that is, when used internally and as a gargle. In severe types or those with malarial symptoms, quinin hypodermically should be used first, the picric acid following. In the chronic forms, picric acid and sodium cacodylate should be alternated or given at the same time, and also some sodium bicarbonate at intervals. Several physicians report good results from the use of thymol in the treatment of this disease.

Blood in Pellagra

DR. BEVERLY YOUNG, San Antonio, Texas: The red cells, hemoglobin, and hemoglobin index vary greatly. Taking the peripheral blood as an index, the small mononuclear leukocytes are markedly increased, while the other cells, except the polynuclears, are slightly, if at all, affected. Some cases show slight eosinophilia, but this was variable, and in every case in which the eosinophilia was marked, I was able to find the ova of intestinal parasites. A high lymphocyte count is usually of good prognostic import. This high count usually persists not to the same extent, but above normal, for weeks and sometimes months after the acute symptoms subside and the patient is in excellent physical condition. The cases developing after admission to the hospital, with two exceptions, were among those who were fairly well nourished and eating a well-balanced diet, and

several patients observed during the same period of time who persistently refused nourishment of any kind did not develop pellagra; while the lymphocytes were increased in these cases, they were neither so markedly nor so persistently increased as in the pellagrins. Two of these cases were particularly important for comparison since the patients were so persistent in their fast that they died of exhaustion in spite of forced feeding.

Etiology of Pellagra with Reference to Amebic Invasion

DR. W. A. DEARMAN, Long Beach, Miss.: While Goldberger is of the opinion that pellagra is caused by the lack of a well-balanced ration; that as a prophylactic as well as a curative measure individuals should be encouraged to eat liberally of peas, beans and other legumes, and that the whole solution of the pellagra problem depends on this principle, is not supported in toto by the end-results of the Thompson-McFadden Commission. I have been able to demonstrate the presence of amebas in the centrifuged urine of about 50 per cent. of pellagrins that came under my observation. About 40 per cent. showed pyuria. The amebas were large and small, and they were very sluggish in their movements. Sometimes a cell resembling an encysted ameba would have to be recognized and kept under close observation in order to observe motility; some were actively motile. While I have no evidence at hand to prove conclusively that amebic invasion is responsible for pellagra, the symptomatology, the clinical course and the postmortem findings run parallel with the depredations often observed in a profound amebic invasion.

Discussion on Pellagra

DR. ALLEN W. FREEMAN, Washington, D.C.: The evidence is strong that there is a definite relationship in many cases between the incidence of pellagra and certain deficiencies in the diet. Dr. Goldberger does not claim, and does not pretend to prove, that diet is the only factor in pellagra, but he has produced pellagra so clean cut that we must either totally disprove his findings or attempt to put the regimen he recommends into effect.

DR. STEWART J. ROBERTS, Atlanta: The one thing we most need in this country at present in regard to the etiology of pellagra is absolute honesty in realizing that we do not know the cause of the disease because we cannot prove it. By the cure of the disease I understand that a patient who has had the disease is absolutely free of it forever unless reinfected. It is one thing for a pellagrin to recover from an attack of pellagra, and quite a different thing for a pellagrin to recover from the disease which we call pellagra.

DR. O. M. MARCHMAN, Dallas, Texas: Last August our city society decided to hold a pellagra clinic, and we had at this clinic twenty-five or thirty patients in different stages of the disease. Physicians of our county and surrounding counties have used every available remedy, and not only the patients at the clinic but others treated in the various institutions were relieved in a like manner by all of these various treatments with a generous diet. We have had probably 100 cases of pellagra in Dallas since last August, an increase of 100 per cent. over previous years. These pellagrins were from the poorest class and were fed a one-sided or limited diet. Many of these patients were put on a generous diet, without any medical treatment whatsoever, and recovered as rapidly as those treated by various shotgun prescriptions.

DR. ALLAN EUSTIS, New Orleans: I have heard no evidence as yet to counteract Goldberger's ideas. I do not believe any of us are able to pass on Goldberger's results until we see the published details of his investigation. Dr. Goldberger does not claim that he has found the cause and a cure for pellagra, but I believe the condition can be remedied in great part.

DR. JOHN E. STINSON, Chickasha, Okla.: I believe that pellagra is infectious. The symptoms of the disease are hard to combat by any method of treatment. I do not believe any true case of pellagra has ever been cured.

DR. JAMES A. HAYNE, Columbia, S. C.: In South Carolina, up to the present time we have had 1,200 deaths from pellagra. The death rate from tyhpoid fever in South Carolina is only twenty-six per hundred thousand. It is about equal to the death rate from tuberculosis. It is a little less than the death rate from the circulatory diseases, such as heart and kidney disease.

DR. JOHN L. JELKS, Memphis, Tenn.: In cases of infection of the intestine, such as we have in pellagra, certain diets are very good, while others are very bad. Patients with amebiasis will manifest the same train of symptoms as those encountered in cases of pellagra. Note the number of cases of amebiasis and the number of cases of pellagra in which there is pain in the back of the neck. Note the number of cases of pellagra in which you will find marked melancholia. I believe that pellagra is an infection which takes place primarily in the intestine.

DR. J. R. LEHMANN, Dallas, Texas: It has been shown that we carry in our mouths the organisms of pneumonia, and yet not all of us get pneumonia. But when conditions are ripe, we develop pneumonia. Is it not possible that similarly in pellagra, when conditions exist which favor a lowering of the resistance, the disease develops?

DR. A. A. HEROLD, Shreveport, La.: I believe diet is the principal causative factor in pellagra. In Catto Parish, agricultural and mineral oil regions are side by side. There is practically no difference between the people who live there. In the mineral oil districts, sanitation is more imperfect; flies and mosquitoes are more numerous in the oil region, and insect-borne diseases, such as typhoid and malaria, are much more common in the oil districts than in the agricultural; yet not one case of pellagra has been reported from the oil fields, but 200 cases have been reported from the agricultural regions. There is one explanation for that. The usual ration of the farmer is fat meat, cornmeal and some syrup. On the other hand, the workers in the oil regions will not stand for poor rations. They live on a thoroughly mixed and varied diet and do not develop pellagra.

DR. E. H. MARTIN, Hot Springs, Ark.: It has been an axiom with me for several years that an absolute preventive of pellagra is a bank account. A man who has money and who is well nourished will not get pellagra, and the man who has pellagra, who gets well nourished, will recover.

DR. A. L. LEVIN, New Orleans: A study of the intestinal tract is most important in making a diagnosis of pellagra. There is a class of cases of pellagra in which the skin symptoms are lacking. Involvement of the nervous system is not present, and the only symptom is the involvement of the gastro-intestinal tract. Patients will complain of stomach disturbance; they have symptoms of heaviness and fulness and pain, with slight cramps and loose bowels. The fact that pellagra is on the increase is due to the fact that we are not sufficiently expert as yet to differentiate those cases which are pellagra from those which are not.

DR. CHARLES W. GARRISON, Little Rock, Ark.: Every speaker, representing either the infectious or opposite theory of pellagra, has admitted that diet is one of the most essentiai and important factors in prevention and treatment of the disease.

DR. FRANK H. CLARKE, Lexington, Ky.: Lexington is a splendid agricultural district; it is a short-horn and Jersey cattle country, and a fine race horse country; many wealthy people have settled there, and yet pellagra has appeared among the rich as well as among the poor.

DR. BRUCE, Alabama: I recall two patients who returned from the Johns Hopkins Hospital, who were treated there for amebiasis with secondary anemia. These patients came under my observation during this year with the later symptoms of pellagra. The skin symptoms had shown up and the severe nervous symptoms. In the beginning, these cases were incorrectly diagnosed and were treated as instances of amebic dysentery, but since developed all of the later symptoms of pellagra.

DR. LOUIS LEROY, Memphis, Tenn.: Whenever there is a lesion in the intestinal mucosa, there is a possible port of entry for pellagra. When one case occurs in any locality, if there are open earth closets, if there is ground infection, more cases can be looked for pretty soon.

DR. WILLIAM KRAUSS, Memphis, Tenn.: With reference to the open closet, until very recent times, we had no pellagra originating in the city of Memphis; but recently we have seen many cases of the disease which originated there, and we have no open closets in our city. Something was said about personal cleanliness, and consequently one might infer from that that only persons who are filthy in their habits contract pellagra; and yet we have an increasing number of cases of the disease in Memphis among the best people who live in the best surroundings, who take two baths a day, and eat good, nourishing food.

DR. THOMPSON FRAZER, Asheville, N. C.: I have seen from seventy-five to 100 cases of pellagra, but in the last two years only a few, which I find is in keeping with the history of the disease, which has tended to spread from one section to another.

DR. C. B. BOWYER, Stonega, Va.: In the coal mining district we have never seen a case of pellagra in a miner. Dr. McCormack says that pellagra, so far as he knows, has never deevloped in miners in Kentucky.

DR. W. L. ALLISON, Fort Worth, Texas: I now agree with Goldberger that diet stands as a predisposing factor. When you feed pellagrins good, nourishing food, many of them recover. It is not true in Texas that pellagra occurs only among the poor.

(To be continued)

MISSISSIPPI VALLEY MEDICAL ASSOCIATION

Forty-First Annual Meeting, held at Lexington, Ky., Oct. 19-21, 1915

(Concluded from page 1943)

Etiologic Relationship Existing Between Gastric Ulcer and Gastric Cancer

DR. FRANK SMITHIES, Chicago: It seems to have been shown that benign gastric ulcer can be produced in a multitude of ways, the method of production having only relative effect on the ulcer resulting, pathologically. It seems that in a given gastric ulcer it is impossible to prognosticate its course, duration or type of termination. Free excision of all chronic gastric ulcers should be performed whenever such procedure is mechanically possible.

DISCUSSION

DR. CHARLES G. LUCAS, Louisville, Ky.: None of us are competent to give a statement as to when an ulcer may become malignant, nor how long it will continue. I have in mind a patient who had a tumor of six months' standing before seeking consultation. A laparotomy was done and the tumor was found to be inoperable. Patients with ulcer of the stomach should be placed in bed as soon as they come under the care of the internist, and they should then be treated carefully for from four to five weeks. They should report often and submit to frequent examination. If, after six or seven weeks of effort of this kind, no results are obtained, then a surgeon should be called. These cases should be treated by both the internist and the surgeon working together, and finally they should come back to the internist.

DR. WILLARD J. STONE, Toledo, Ohio: I should like to ask Dr. Smithies what percentage of cases of gastric and duodenal ulcer in his experience shows a positive Wassermann reaction?

DR. CHAUNCEY DOWDEN, Louisville, Ky.: If conditions incidental to appendicitis cause ulcer, then obstipation and constipation become important etiologic factors. If appendicitis will cause gastric ulcer, why will not chronic obstipation bring about a like condition? In my opinion it may even produce pyloric spasm. If we have a condition that will produce pyloric spasm, we also have a condition which will in time cause gastric ulcer. I should like to impress on the internist the importance of treating the ulcer patient before the condition becomes ulcer. The majority of patients who come to us showing a condition of hyperacidity are in all probability ulcer patients. This is the time when they need proper attention and, in all probability, the right treatment administered at this time would prevent the development of duodenal or gastric ulcer.

DR. FRANK SMITHIES, Chicago: In our proved ulcer cases, the ratio of positive Wassermann was 1:300. One of the first points in the cure of disease is to remove all the foci of infection in the mouth, throat and nose, and we should also look out for an infected appendix or an infected gallbladder. If we let these organs pass by unnoticed we are simply locking the door after the horse has escaped.

The Heart and Blood Vessels in Tuberculosis

DR. FRANCIS M. POTTENGER, Monrovia, Calif.: Tuberculosis may affect the blood vessels either from within or from without, and the lesion may be of all degrees of severity from that of every slight trauma to necrosis. Sometimes an infection is followed by an opening in the vessel wall and hemorrhage; at other times an exudation results which goes on to repair, and again an endarteritis with obliteration of the lumen occurs. It seems probable that many of the hemorrhages in tuberculosis, particularly those in which only small amounts of blood are expectorated, may be due to the injury of the vessels resulting from the action of toxins, or the formation of tubercles in the walls of the vessels. The capillaries are most commonly affected, while small veins and arteries are less commonly so. Tubercles may be found in the walls of any vessels of the body, including the aorta. This being true, it is surprising that miliary tuberculosis is not a more common infection than it is. That it is not is probably due to the fact that the vessel is often occluded by the inflammatory process so that bacilli do not get into the blood stream, and protective cell sensitization and antibodies reduce the virulence of or destroy the bacilli which gain entrance to the blood stream before they find lodgment in the tissues, in those patients in whom infection has been present long enough to build up a specific immunity.

For the heart muscle itself I have great confidence in digitalis and citrated caffein. If the early symptoms are recognized and the patient is put in the recumbent position and given digitalis in proper doses, the crisis can often be averted. Digitalis strengthens the heart's contractions, and in this way probably affords better nutrition to the organ. If digitalis is to be used, it should be used in doses sufficiently large to produce an effect. I use a standardized tincture in doses of from 10 to 15 minims three times a day until the pulse improves or the physiologic effect is reached. I then discontinue the remedy for three days and repeat again, giving the remedy three or four days and then withholding it for a like period. If the case is urgent, I often give digitalis intravenously in 15 minim doses three times a day until the effect is produced. Citrated caffein can be given in 3 grain doses every four hours and continued as long as necessary.

The patient should be fed nourishing food in concentrated form. The bowels should be kept free to relieve any toxins that can be removed through the alimentary canal. The important thing in the handling of these cases is to recognize them early, and to treat them properly. These degenerative changes in the heart muscle may threaten the patient's life and yet the heart may recover itself as the patient improves.

Spasmophilia

DR. J. P. SEDGWICK, Minneapolis: In the acute and subacute cases under 1 year, with high electrical reactions, the results obtained with large doses of calcium chlorid are brilliant. In the more chronic and very severe cases, calcium is of definite value. I have also used subcutaneous injection of 20 c.c. of a 0.125 per cent. solution of magnesium sulphate. The results with this method have also been satisfactory, but the injections are painful and frighten the older children. The electrical reactions give us a means of diagnosing this condition whether active or latent, thus distinguishing it in its various manifestations, such as the convulsions from epilepsy and the laryngospasm from inflammatory croup. Laryngospasm, general convulsions, tetany in children, spasmodic apnea, and the Chvostek and Trousseau phenomena are manifestations of the same diathesis or

condition. The condition is closely related to some metabolic disturbance, probably of the calcium salts, and is markedly benefited by a carbohydrate, cow's milk free, or a breast milk diet. Phosphorus and cod liver oil are of value by the effect on the calcium retention. Calcium and magnesium give quicker and more definite results. The prognosis is usually good, in the cases in which treatment is begun early.

Diagnosis of Renal Infections

DR. JOHN R. CAULK, St. Louis: Of 182 cases, only 17.7 per cent. appeared with a diagnosis of kidney disease. It is striking that not a single case of pyonephrosis came in with a diagnosis of renal infection, and it was confused with malaria in a high percentage of cases. The average duration of symptoms in this series has been three years and six months, so long in many cases as to deprive the individual of satisfactory chances of recovery. Renal pain was present in 40.9 per cent., was most common in pyonephrosis and nephrolithiasis, about 70 per cent., and least common in tuberculosis, 17.6 per cent. Fever was present in 15.7 per cent. As to faulty diagnosis, appendicitis appears in 6.6 per cent. of all the cases; it is most commonly confused with nephrolithiasis, 26.5 per cent., and 6.5 per cent. in pyelitis. It was not confused with pyelonephritis, pyonephrosis or tuberculosis. Bladder trouble was diagnosed in 60 per cent. of all cases, most common in tuberculosis, 93 per cent., and least in nephrolithiasis, 30 per cent. Pus was present in 93 per cent., casts in 7 per cent., most of these in pyelonephritis, 35 per cent. The general average is extremely low.

The colon bacillus was found in 57 per cent. of the cases, the staphylococcus in 23.5 per cent.; 17.5 per cent. were mixed. Tuberculosis was present in 9.4 per cent. of all cases. The functional test was diminished in 68.7 per cent. of the cases. It showed its most marked diminution in pyonephrosis, and its slightest in pyelitis. The Roentgen ray was positive in 30.4 per cent. of all cases. Cystoscopic examination showed changes in the bladder wall in 58.9 per cent.

Mechanics of Renal Infection

DR. EDWARD L. KEYES, JR., New York: Renal colic is an acute stoppage of the ureter, the cause of which is usually a small stone or a slight kink. On being called to such a case, we should immediately administer morphin to the point of relieving pain, not only for the purpose of consoling the sufferer, but also for the purpose of curing the condition, for if we can relieve the pain, and thereby relax the spasm, we actually relieve the retention, and permit the unfolding of the kink for the passage of urine about the stone, or even the passage of the stone itself. In the second place, we have here a clue to the mystery that surrounds irrigation of the renal pelvis. Much of the benefit attributed to this treatment is undoubtedly due to the passage of the ureteral catheter, for it is to be noted that many cures attributed to this treatment follow the first or the second washing. Such cures are due to mechanical relief of slight obstructions. I have several times relieved acute renal infection by ureteral catheterization, and Dr. Howard Lilienthal some years ago recorded several striking illustrations of the therapeutic effect of ureteral catheterization in acute renal infection.

Prolapse of Bladder and Uterus

DR. THOMAS J. WATKINS, Chicago: The pathologic changes in the part of the bladder wall which is attached to the vaginal wall have not received sufficient attention. These changes are due to stretching of this part of the bladder wall, and produce vesical symptoms. The urethra is usually displaced downward, and disturbs continence of urine. The pathologic changes in the uterus result mostly from circulatory disturbances, such as congestion, edema, varices and hyperplasia. The following operations are advised, the choice depending on the amount of prolapse, and the age of the patient as regards future pregnancies: (1) an advancement operation; (2) fixation of the round ligaments to the anterior vaginal wall and fascia, and (3) the transposition operation, transposing the relative position of the bladder and uterus. This is also called the interposition operation. Partial excision or amputation of the cervix is done with all of these operations as may be indicated, and a perineorrhaphy is made. The advancement operation consists chiefly in advancing the vaginal wall, including the submucous connective tissue, on the cervix. This operation gives excellent results in cases of a moderate amount of prolapse, and does not interfere with subsequent pregnancies. Vaginal attachment of the round ligaments into the vaginal wall is done in conjunction with the advancement operation in cases with a greater amount of prolapse, during the child-bearing period, and in cases of retroposition of the uterus. The transposition operation is the one of election after the menopause. The fundus of the uterus is attached to the connective tissue and vagina sufficiently low to make recurrence of the bladder hernia impossible. I have had no recurrence of cystocele after this operation, which I have been doing for seventeen years. The uterus is never in obstruction in the vagina when so sutured. Modifications of the operation are given for cases of very large uterus and for cases of complete prolapse with a very small uterus. The cavities of the uterus and vagina may be completely closed in very extensive cases of prolapse in elderly women in whom there is no objection to occlusion of the vaginal canal.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

November, LXXII, No. 5, pp. 769-944

1 *Present Tendencies in Gynecologic and Obstetric Practice. C. L. Bonifield, Cincinnati.
2 *Local Anesthesia in Herniotomy. J. H. Jacobson, Toledo.
3 *Case of Gallstone Causing Intestinal Obstruction and Volvulus. R. B. Hall, Cincinnati.
4 *Cholecystectomy vs. Cholecystostomy. L. W. Swope, Pittsburgh.
5 *Unusual Contents of Inguinal Hernia; Report of Case. C. W. Moots, Toledo.
6 Surgery of Appendix. J. W. Keefe, Providence, R. I.
7 *Prognostic Sign in Acute Suppurative Peritonitis. H. O. Pantzer, Indianapolis.
8 *Rare Congenital Abnormality of Sigmoid. B. Van Sweringen, Fort Wayne, Ind.
9 Postoperative Ureteral Fistula. H. D. Furniss, New York.
10 *Mesenteric Thromboses; Report of Two Cases. W. E. Darnall, Atlantic City, N. J.
11 Remove Uterus Instead of Ovaries for Incurable Cases of Menstrual Disorders. J. H. Carstens, Detroit.
12 Use of Sodium Citrate for Direct Blood Transfusion. C. B. Schildecker, Pittsburgh.
13 Newer Conceptions of Intestinal Stasis. G. W. Crile, Cleveland.
14 "Gas-Pains." G. K. Dickinson, Jersey City, N. J.
15 *Use of Luteum Extract in Treatment of Menstrual Disorders. A. P. Leighton, Jr., Portland, Me.
16 *Present Status of Twilight Sleep in Obstetrics; Study of Over Two Thousand Cases. A. J. Rongy, New York.
17 Acute Appendicitis in Children. K. H. Aynesworth, Waco, Texas.

1 and 10. Abstracted in THE JOURNAL, Oct. 2, p. 1213.
2 and 3. Abstracted in THE JOURNAL, Oct. 2, p. 1211.
4, 5, 7 and 8. Abstracted in THE JOURNAL, Oct. 2, p. 1212.
15 and 16. Abstracted in THE JOURNAL, Oct. 2, p. 1213.

Annals of Surgery, Philadelphia

November, LXII, No. 5, pp. 513-640

18 Mesenteric Thrombosis; Report of Cases. E. Eliot, Jr., and J. W. Jameson, New York.
19 *Case of Splenectomy. C. L. Scudder, Boston.
20 *Diagnosis of Appendicitis in Early Typhoid. R. Winslow, Baltimore.
21 Typhoid Perforation. J. H. Gibbon, Philadelphia.
22 Frequency of Chest Complications Among Wounded. K. Taylor, Paris.
23 *Transverse Abdominal Incision. W. Meyer, New York.
24 Closure of Mucocutaneous Fecal Fistula. E. Beer, New York.
25 Anatomic Study of Femoral Hernia. T. T. Thomas, Philadelphia.
26 Clinical Status of Autograft. A. A. Law, Minneapolis.
27 Fractures of Femur. C. R. Steinke, Philadelphia.
28 End Results in Fractures of Both Bones of Leg. R. L. John, Philadelphia.

19. **Case of Splenectomy.**—Scudder records a case of splenic anemia which terminated fatally following splenectomy. A thrombosis occurred in a vascular system of the mesenteric

not directly connected with the vascular system of the spleen. At the second operation the gangrene of the small intestine was found definitely localized and had occurred independently of any plugging thrombosis of the splenic vessels proximal to the ligatures placed at the time of the splenectomy.

20. **Appendicitis in Early Typhoid.**—Winslow reports four cases occurring in the same hospital at almost the same time and treated by several different surgeons. From the appearance of the appendixes at the time of operation, and from the subsequent course of the case, he says, it is evident that unnecessary operations were done during the active period of a dangerous disease. The first patient was taken suddenly ill, with headache and pain in the right side, while at work. She had been in good health up to this time. The second patient appears to have had a general diffuse tenderness exaggerated on pressure in the appendical area on admission to the hospital. Apparently the disease began five days previously with chilly sensations followed by fever, and not with pain. The third patient was taken sick with abdominal pain, headache and a stiff feeling of the abdomen. There is no history of preceding fever. The fourth patient was taken with pain and slight elevation of temperature. In three of these four cases pain appears to have been the symptom that first attracted the patients' attention and not fever. Chilliness and fever was the prominent feature of the onset of one case. Headache was noted in two cases as one of the initial symptoms, and nausea and vomiting in two patients. The leukocyte was 8,200, 8,000 and 10,000 in three cases, and in one case the polynuclears were 74 per cent., small mononuclears 22 per cent. and large mononuclears 4 per cent., but the leukocyte count was not recorded. One patient had continuous pain in the right iliac region, with tenderness and muscular rigidity at McBurney's point. A second had diffuse abdominal tenderness with distinct muscular spasm on deep pressure over the appendical region. A third had pain in the right side of the abdomen, tenderness but not much rigidity. In none of these cases was the Widal reaction positive at the time of the operation, but became so in each subsequently. Rose spots also do not appear at such an early period of typhoid. In all these cases the appendix was somewhat congested, possibly thickened, but not acutely inflamed, while the large and small intestines were also more hyperemic than normal. The mesenteric and prevertebral chains of glands were also markedly enlarged in most of the cases.

Winslow believes mistaken diagnosis of appendicitis in early typhoid is by no means uncommon. The leukocyte count is probably the most reliable diagnostic sign, and it is usually low in typhoid and markedly increased in appendicitis, though at times there may be a low leukocyte count in serious and even fatal appendicitis. There is less muscular rigidity and tenderness in these typhoid cases than in cases of genuine appendicitis.

23. **Transverse Abdominal Incision.**—Meyer has tried the transverse abdominal incision of Braunschweig and Perthes in eight cases and has been so favorably impressed with it, that he feels it should be used more frequently.

Archives of Internal Medicine, Chicago

November, XVI, No. 5, pp. 693-892

29 *Carbohydrate Utilization in Diabetes. E. P. Joslin, Boston.
30 *Renal Function as Measured by Elimination of Fluids, Salt and Nitrogen and Specific Gravity of Urine. H. O. Mosenthal, Baltimore.
31 *Differentiation of Cerebral and Cardiac Types of Hyperarterial Tension in Vascular Disease. W. J. Stone, Toledo.
32 Treatment of Cardiac Insufficiency by New Method of Exercise with Dumb-Bells and Bars. T. B. Barringer, Jr., and J. Teschner, New York.
33 *Resistance of Red Blood Cells to Hypotonic Salt Solution in Various Anemias. L. W. Hill, Boston.
34 *Study of Case of Auricular Flutter. S. A. Levine and C. Frothingham, Jr., Boston.
35 Sino-Auricular Heart Block; Report of Case in Man. J. A. E. Eyster and J. S. Evans, Madison, Wis.
36 *Clinical Studies on Respiration; Effect of Carbon Dioxid in Inspired Air on Patients with Cardiac Disease. F. W. Peabody, Boston.
37 *Poisoning by Mercuric Chlorid and Its Treatment. S. W. Lambert, and H. S. Patterson, New York.
38 *Congulation Test for Syphilis, as Devised by Hirschfeld and Klinger. H. N. Cole and S. Eng-Kiu Chiu, Cleveland.

29. **Carbohydrate Utilisation in Diabetes.**—Joslin closes his article as follows: It is gratifying to be able to record that the recent experimental evidence confirms the old clinical view that the severe diabetic still retains power to utilize a portion of the carbohydrate of his diet, small though it may be, and that herein lies renewed hope for the success of treatment.

30. **Renal Function.**—The nephritic test meal, as suggested by Hedinger and Schlayer, and elaborated by Mosenthal in this paper, has not only proved itself to be an admirable test for renal function, but also in many cases has been of great value in diagnosing cardiac, renal and other conditions. The test is a qualitative one of the mode of urinary function as measured by the specific gravity, salt, nitrogen and water excretion in two-hourly periods during the day, and for a twelve-hour period at night. In chronic diffuse (parenchymatous) nephritis, the condition of renal function is characterized by its variability. In these instances, the results of the test meal have proved to be extremely valuable in giving an idea of the status of salt, nitrogen and water excretion, besides the picture of renal efficiency as a whole. The findings in myocardial insufficiency vary according to the activity of the heart. Distinct differences are found with myocardial decompensation and the accumulation of edema, the period of eliminating edema, and subsequently, when cardiac compensation is again fully established, it requires some time before the kidney resumes its normal activity. This intervening period is indicated by a tendency to a low, fixed specific gravity and a nocturnal polyuria. During the period of full myocardial decompensation the results of kidney activity are characteristic, the specific gravity is markedly fixed at the level of about 1.020, the salt output is diminished, that of nitrogen is high, in marked contrast to the salt, and there is oliguria. When chronic nephritis and cardiac decompensation coexist, as they so often do in hypertensive nephritis, the urine may exhibit the characteristics due to either lesion. The determining factor is probably to be found in the chronic nephritis which may or may not be so far advanced as to present an unchanging barrier to the influence of renal congestion.

31. **Differentiation of Cerebral and Cardiac Types in Vascular Disease.**—Stone urges that the determination of systolic and diastolic pressures by the auscultatory method should supplant the palpatory method. The pulse pressure measures the energy of the heart in systole in excess of the diastolic pressure. For clinical purposes it represents the load of the heart. Under normal conditions, it is approximately 50 per cent. of the diastolic pressure. Since the diastolic pressure represents the constant pressure between systoles, it is a better index of peripheral resistance and of hypertension than the systolic pressure. A sustained diastolic pressure of 105 to 110 or above signifies hypertension, irrespective of the height of the systolic pressure. The diastolic is less influenced by physiologic factors than the systolic pressure. In arterial hypertension incident to myocardial and valvular lesions, the pulse pressure and heart-load are increased as a rule, the overload factor averaging 46 per cent. in the twenty-four patients of the cardiac hypertension group.

In the cerebral hypertension group the diastolic pressure is persistently high, from 120 to 160. This group comprises the nephritic cases, so-called, with symptoms of polyuria, albumin, casts and edema. The pulse pressure is not so greatly increased, as a rule, and the heart-load percentage is within normal limits of 40 to 60 per cent. The term cardiorenal disease applied to patients with cardiac manifestations in nephritis, Stone says, is a misnomer. Cardiac symptoms are many times present in such cases but the manifestations and terminal events of vascular disease associated with disturbed renal function are more cerebral than cardiac. If any compound name is applied descriptive of the condition, the term cerebrorenal would be more

approximate. The term vascular disease, however, covers the ground more completely. In acute circulatory failure due to shock, including hemorrhage, in an individual with a strong acting heart, the diastolic pressure is decreased, while the pulse pressure is increased, since the heart is exerting all its force in an endeavor adequately to supply the periphery with blood. In circulatory failure due to cardiac dilatation or myocardial degeneration incident to acute or long continued illness, the systolic pressure falls and tends to approximate the diastolic pressure, with the result that the pulse pressure is decreased.

In acute infections a sustained pulse pressure warrants a more favorable prognosis, as a rule, than a low pulse pressure, other things being equal, although the change from normal to low pulse pressure in circulatory failure may occur rapidly. As a rule, the lower the pulse pressure, the greater the danger of circulatory failure. Measures directed to the reduction of blood pressure by diet, habits, venesection and vasodilators are usually indicated in the cerebral hypertension group because of the high diastolic pressure, but are rarely indicated in the cardiac hypertension group. The high systolic pressures in the cardiac hypertension group are compensatory measures and rest; digitalis, strophanthin, camphor or caffein are indicated when the heart muscle shows signs of fatigue.

33. **Resistance of Red Blood Cells.**—Hill found that the resistance of normal blood to hemolysis by hypotonic salt solution is fairly constant. The figures for pernicious anemia and for secondary anemia are practically the same. In any given case of anemia, whether primary or secondary, the resistance may be high, normal or low; there is no such constant finding as there is in normal blood. In general, in both pernicious and secondary anemia, hemolysis is likely to begin sooner and end later than it does in normal blood. The hemoglobin content of the cell seems to bear no relation to its resistance. Arsenic definitely increases the resistance of the red cells and tends to inhibit hemolysis. Splenectomy increases the maximal resistance; it may decrease the minimal resistance.

34. **Case of Auricular Flutter.**—Auricular flutter was observed by Levine and Frothingham twice in a man with organic disease of the aortic valve consisting in stenosis and slight regurgitation. Opportunity was given to study him during and between attacks by means of the electrocardiograph and also by tracings from the jugular vein and brachial artery, taken simultaneously with the electrocardiogram. In this man the auricular rate during flutter varied at different times from 350.5 per minute to 324.7 per minute. The ventricles were beating most of the time during the attacks at half that rate showing a 2:1 block. During the attack of flutter the auricles were practically independent of vagus control, although a slight effect on the auricular rate could be produced by deep breathing. The ventricles could be inhibited by pressure on either the right or left eye, but the auricles could not be inhibited. During the attack of flutter there was slight pulsus alternans as shown in both the electrocardiogram and brachial tracings. This disappeared when the heart returned to its normal rhythm. Roentgenograms showed no appreciable difference in the outline of the heart during the attack, and the pulse pressure, which was small normally in this case, diminished during flutter.

36. **Effect of Carbon Dioxid on Patients with Cardiac Disease.**—Experiments are described by Peabody in which normal subjects and patients with cardiac or cardiorenal disease have breathed air containing increasing amounts of carbon dioxid. The inspired air was analyzed for its carbon dioxid content, and the total ventilation of the subject per minute was measured at frequent intervals. Thus the increase in ventilation caused by a given rise of carbon dioxid in the inspired air could easily be determined. It was found that normal persons respond to carbon dioxid in a fairly constant manner, and that their total ventilation is doubled when the carbon dioxid is between 4.2 and 5.4 per cent. Cardiac and cardiorenal patients whose circulation is compensated, and who have no evidence of an acidosis as shown by the carbon dioxid tension of the alveolar air, behave in an exactly similar manner. Cases, however, with decompensation and with a grade of acidosis sufficient to lower the alveolar carbon dioxid tension react much more quickly to carbon dioxid, and may double their ventilation when the carbon dioxid is only 2 to 3 per cent. of the inspired air. Dyspnea is therefore much more easily produced in the patients with acidosis than in those without acidosis. That the increased sensitiveness to carbon dioxid does in fact depend on the acidosis was especially clearly demonstrated in two cases. Although the results reported relate only to the dyspnea caused by the inspiration of air containing carbon dioxid, Peabody believes it is wholly logical to assume that the same effect would be produced by acids which entered the blood stream from the body cells. The presence of an acidosis would thus render the organism more sensitive to the carbon dioxid or other acids formed during muscular work, and the amount of muscular work sufficient to cause dyspnea would be less than under normal conditions.

37. **Poisoning by Mercuric Chlorid and Its Treatment.**—The treatment, as it is formulated by Lambert and Patterson, for cases coming under observation early, is as follows: The first indication is to give the patient the whites of several eggs and then wash out the stomach thoroughly. This has usually been done before the patients are admitted to the hospital. On admission, the stomach contents are expressed and examined for mercury, the stomach is thoroughly washed and a pint of milk introduced. If no stomach contents are obtained before lavage, then the lavage water is examined for mercury. Urine passed spontaneously, or that obtained by catheter, is examined for mercury. The metal appears in the urine in from three to twenty-four hours after it has been swallowed. If more than a day has elapsed since the poisoning occurred, a stool should also be examined for the poison. If the first lavage does not allay the nausea and vomiting, it is repeated after an hour, and the following routine is begun as soon as the stomach will permit: 1. The patient is given every other hour 8 ounces of the following mixture: Potassium bitartrate, 1 dram; sugar, 1 dram; lactose, one-half ounce; lemon juice, 1 ounce; boiled water, 16 ounces. Eight ounces of milk are administered every alternate hour. 2. The drop method of rectal irrigation with a solution of potassium acetate, a dram to the pint, is given continuously. The amounts of urine secreted under this treatment are very large. In Case 8, 269 ounces were passed in twenty-four hours on the fourteenth day of treatment. 3. The stomach is washed out twice daily. 4. The colon is irrigated twice daily, in order to wash out whatever poison has been eliminated in that way. 5. The patient is given a daily sweat in a hot pack.

The authors emphasize the necessity of keeping up the treatment with the colonic drip enteroclysis day and night without interruption. In cases in which one single dose has been taken, after two negative examinations of the urine, on successive days, it seems legitimate to stop the treatment. For the less severe cases, a week may be a sufficient time for treatment. When large or successive doses have been taken, or when there is a preexisting kidney lesion, or when treatment begins several days after the poison is taken, longer periods of treatment, up to three weeks, are necessary.

38. **Coagulation Test for Syphilis.**—Cole and Chiu tested fifty-one specimens of spinal fluids from different patients. In quite a few cases the Wassermann has given negative results while the coagulation test has been positive; in fact, of the fifty-one cases, the coagulation test gives eleven more positive than the Wassermann, making a difference of 21 per cent. more positives for the coagulation test. The authors believe that the spinal fluid, inactivated at 58 C. (136.4 F.) for half an hour and used in dose of 0.4 c.c., gives good results with this test.

Boston Medical and Surgical Journal

November 18, CLXXIII, No. 21, pp. 759-794

39 Midwife Problem. A. K. Paine, Boston.

40 Pregnancy Clinic and Midwife; Comparison. J. L. Huntington, Boston.

41 *Clinical Records in Relation to Teaching and Research; Plan to Promote Conservation and Utilization of Material. E. S. Kilgore, San Francisco.
42 Nomenclature and Classification of Diseases in Use in University of California Hospital. J. L. Whitney, San Francisco.
43 *Gummatous Cervical Adenitis; Its Relation to and Mistaken Diagnosis for Tuberculous Cervical Adenitis. W. P. Coues, Boston.
44 Local Anesthesia in Radical Cure of Hernia. A. Ehrenfried, Boston.
45 Elimination of Voice Defects Following Adenoid and Tonsil Operations. W. B. Swift, Boston.

41. **Completeness and Accuracy of Clinical Records.**—Experiences are reported by Kilgore in the cooperation of a university hospital, medical school and training school for nurses to promote accuracy and completeness of clinical records. To the same end of recording certain data. In addition to the usual diagnosis index (which should be made to include many more of the secondary diagnoses), a plan is described for indexing many clinical facts which cannot be included among the diagnoses.

43. **Diagnosis for Tuberculous Cervical Adenitis.**—Coues urges that cases of cervical adenitis supposed to be tuberculous, yet not quite characteristic, should be regarded as possibly gummatous, and careful study should be made to prove or disprove this supposition definitely. The clinician must fall back on consideration of the case with an exhaustive history pertaining to possible syphilis, to arrive at a correct diagnosis.

Bulletin of Lying-In Hospital of City of New York

September, X, No. 2, pp. 79-130

46 Extraperitoneal Cesarean Section; Report of Three Cases. J. W. Markoe, New York.
47 Report of Work of First Division of Hospital. M. K. Smith, New York.
48 Fissure-Fracture of Vault of Skull in Newborn. E. D. Truesdell, New York.
49 *Practical Experience with Obstetric Chair. J. W. Markoe, New York.
50 Three Cases of Congenital Anomaly of Kidney. J. R. Losee, Brooklyn.
51 Hygiene of Pregnancy. G. W. Kosmak, New York.
52 Case of Primary Carcinoma of Appendix. J. W. Markoe, New York.

49. **Experience with Obstetric Chair.**—Markoe's experience with his obstetric chair has been favorable in more than 10 per cent. of the cases; labor lasted only one hour or less after the patient was put in the chair. In one case apparently fifteen minutes sufficed, though here the cervix was four fingers dilated at the time, while in three cases in which the cervix was only two or three fingers dilated, from thirty to forty-five minutes was required. In eleven cases in which conditions anatomically might have necessitated operative interference, spontaneous delivery occurred; in other words, in 33.3 per cent. of the cases the obstetric chair apparently obviated the necessity of any other artificial aid. Of these eleven patients, eight were in the first stage of labor and three in the second stage. In two cases the patient was kept in the chair for five and six hours, respectively, while in another one hour sufficed to effect delivery, in five cases, two hours and in three cases three hours were necessary for spontaneous delivery. The average duration of the entire labor in these cases were twenty-two and one-half hours, while the average time in the chair was three and-one-third hours. Of the seven multiparas with normal pelves, all were delivered spontaneously, the average time in the chair being two and one-half hours. Of six multiparas with abnormal pelves, in only one case of those spontaneously delivered was the patient in the chair for more than two hours.

Georgia Medical Association Journal, Augusta

November, V, No. 7, pp. 149-170

53 Tumor Formations of Unusual Interest. E. C. Davis, Atlanta.
54 Principles and Practice in Treatment of Cancer. M. B. Hutchins, Atlanta.
55 Uncertainty of Roentgen Ray Shadows of Lungs in Tuberculosis. A. Elkin, Atlanta.
56 Spinal Anesthesia in Surgery; Report of Nine Hundred and Twenty-Seven Cases. G. Y. Massenburg, Macon.
57 Probable Cause and Logical Treatment of Epilepsy. J. C. Pate, Valdosta.
58 Preventive Treatment of Pellagra by Injections of Bad Maize Extracts. H. F. Harris, Atlanta.

Journal of Biologic Chemistry, Baltimore

November, XXIII, No. 1, pp. 1-411

59 Biochemistry of Iodin. Distribution of Iodin in Plant and Animal Tissues. A. T. Cameron, Manitoba, Canada.
60 Influence of Electrolytes on Diffusion of Potassium Out of Cell and Into Cell. J. Loeb and M. Cattell, New York.
61 Measurement of Toxicity. W. J. V. Osterhout, Cambridge, England.
62 Synthesis of Normal Tridecylic and Tetracosanic Acids. P. A. Levene, C. J. West, C. H. Allen and J. van der Scheer, New York.
63 *Metabolic Relationship of Proteins to Glucose. Glucose Formation from Human Proteins. N. W. Janney and N. R. Blatherwick, New York.
64 *Determination of Reducing Sugars. Volumetric Method for Determining Cuprous Oxid Without Removal from Fehling's Solution. F. M. Scales, Washington, D. C.
65 *Acid-Base Equilibria in Blood After Parathyroidectomy. D. W. Wilson, T. Stearns and M. DeG. Thurlow, Baltimore.
66 *Excretion of Acids and Ammonia After Parathyroidectomy. D. W. Wilson, T. Stearns and J. H. Janney, Jr., Baltimore.
67 Rôle of Electrolytes in Diffusion of Acid Into Egg of Fundulus. J. Loeb, New York.
68 Relation Between Configuration and Rotation of Epimeric Monocarboxylic Sugar Acids. P. A. Levene, New York.
69 *Effect of Ingested Purins on Uric Acid Content of Blood. W. Denis, Boston.
70 Apparent Change of Osmotic Pressure of Cell Contents with Osmotic Pressure of Surrounding Solution. J. Loeb and H. Wasteneys, New York.
71 Salicylates. Methods for Quantitative Recovery of Salicyl from Urine and Other Body Fluids. T. W. Thoburn and P. J. Hanzlik, Cleveland.
72 Nature of Dietary Deficiencies of Rice. E. V. McCollum and M. Davis, Madison, Wis.
73 *Essential Factors in Diet During Growth. E. V. McCollum and M. Davis, Madison, Wis.
74 *Cause of Loss of Nutritive Efficiency of Heated Milk. E. V. McCollum and M. Davis, Madison, Wis.
75 Effective Apparatus for Evaporating Aqueous Extracts by Means of Current of Air. T. B. Aldrich, Detroit.
76 Xanthophyll, Principal Natural Yellow Pigment of Egg Yolk, Body Fat, and Blood Serum of Hen. L. S. Palmer, Columbia, Mo.
77 Behavior of Some Hydantoin Derivatives in Metabolism. H. B. Lewis, Philadelphia.
78 Complex Carbohydrates and Forms of Sulphur in Marine Algae of Pacific Coast. D. R. Hoagland and L. L. Lieb, Berkeley, Calif.
79 Experiments on Fate of Ingested Sodium Nucleate in Human Subject. M. H. Givens and A. Hunter, Ithaca, N. Y.
80 Determination of Ammonia Nitrogen in Steer's Urine. D. C. Cochrane, Washington, D. C.
81 Studies on Blood Fat. Fat Absorption and Blood Lipoids. W. R. Bloor, Boston.
82 Configuration of Some of Higher Monosaccharids. G. Peirce.
83 Relative to Total Nitrogen and α-Amino Nitrogen Content of Pepsins of Different Strengths. T. B. Aldrich, Detroit.
84 Identity of Proteins Extracted from Wheat Flour by Usual Solvents. C. H. Bailey and M. J. Blish, St. Paul, Minn.
85 Effects of Certain Electrolytes and Lipoid Solvents on Osmotic Pressures and Viscosities of Lecithin Suspensions. A. Thomas, Worcester, Mass.
86 *Abderhalden Reaction. D. D. Van Slyke, M. Vinograd-Villchur and J. R. Losee, New York.
87 Micromethod for Gasometric Determination of Aliphatic Amino Nitrogen. D. D. Van Slyke, New York.

63. **Metabolic Relationship of Proteins to Glucose.**—The authors state that the ratio 3.60:1 may be accepted as representing the relation between the nitrogen contained in human muscle protein and the glucose originating from the same in metabolism. It may on these grounds be properly concluded that the proteins of the human organism collectively may yield a maximum of about 58 per cent. of glucose in diabetic metabolism. In the fasting human diabetic the severest type, when glycogen and possible sources of glucose other than protein are exhausted, the urinary G:N ratio of 3.4:1 may therefore be accepted as an average value.

64. **Reducing Sugars.**—A new volumetric method is described by Scales for the determination of cuprous oxid in Fehling's solution. The cuprous oxid without filtration from the solution is converted into cuprous chlorid and then pipetted into a known quantity of a dilute iodin solution. The iodin which is not reduced is then titrated with sodium thiosulphate solution. The data indicate that the method will

give results as accurate as those obtained with the gravimetric method. Dextrose, maltose, lactose, invert sugar and no doubt other reducing sugars may be estimated by this procedure. This method yields results in one quarter of the time required to obtain them by the gravimetric method. The method may also be used for the quantitative determination of copper.

65. **Acid-Base Equilibria.**—According to Wilson, Stearns and Thurlow, after parathyroidectomy a condition of alkalosis may develop which is neutralized by acid products formed by the muscular activity incident to tetany. An acidosis condition may result after periods of acute tetany. Periodic variations in the "nonvolatile" acid-base equilibrium seem to accompany the periodic attacks. The acidosis condition resulting from acute tetany or the injection of acid is associated with relief from tetany. Calcium salts, when injected into animals in tetany, lower the value of the dissociation constant of oxyhemoglobin and the alveolar CO_2 pressure, an effect similar to that brought about by the introduction of acids. The above conclusions were reached from a study of the variations of the values of the dissociation constant of oxyhemoglobin, the alveolar CO_2 pressure and the hydrogen-ion concentration of the blood from dogs subjected to parathyroidectomy.

66. **Excretion of Acids.**—After parathyroidectomy in dogs, there is usually a sudden diminution in the excretion of acids and ammonia and a decrease in the ammonia ratio and the hydrogen-ion concentration of the urine. With the development of tetany, the elimination of acids and ammonia increases, accompanied by increased values of the ammonia ratio and the hydrogen-ion concentration of the urine. These variations the authors believe may indicate that an alkalosis condition results after parathyroidectomy, but is neutralized by the tetany which develops. After acute or chronic tetany, an acidosis may occur.

69. **Ingested Purins and Uric Acid of Blood.**—Results are presented by Denis showing the effect of purin free and of high purin diets on the uric acid content of the blood of normal men and of persons suffering from various chronic diseases. In normal men no increase in the circulating uric acid is produced by the ingestion of large quantities of purin. In persons suffering from renal insufficiency a more or less marked increase in the uric acid content of the blood is produced by high purin feeding. It is, therefore, concluded that when the determination of uric acid in the blood is undertaken as a diagnostic test the insistence on a preliminary period during which no purin-containing foods are consumed is unnecessary except in cases in which kidney insufficiency exists, or perhaps in the case of persons who habitually consume extremely large quantities of purin-containing foods.

73. **Essential Factors in Diet.**—McCollum and Davis conclude that certain at present unidentified substances aside from protein, carbohydrates, fats and salts are indispensable for growth or prolonged maintenance, and furthermore, that there is a class of such accessories soluble in fats and another soluble in water and alcohol. From the data available it seems highly probable that, while the amount of accessory substances of either of these classes which is required to induce growth is small, the evidence points to the belief that a certain quantity must be present before any growth can take place, and that above this amount growth seems to be in some measure proportional to the amount of accessories present. It is obvious that in the study of the relative values of isolated proteins fed with mixtures of purified food substances comparable amounts of these two classes of accessories must be supplied. Otherwise no safe interpretation can be put on the results.

74. **Loss of Efficiency of Milk.**—McCollum and Davis found that skim milk powder which has been wet and long heated in a double boiler or heated for a period of one hour in an autoclave at 15 pounds pressure, no longer supports growth as does the unheated product. When heated, milk powder also loses its property of supplementing certain rations made up of polished rice, plus salts and butter fat; namely, rations which require both protein and water-soluble, accessory to make them support growth. Wheat embryo, which is as efficient as milk powder in supplementing such rice rations, can be heated for one hour in an autoclave at 15 pounds pressure without manifesting any deterioration in this respect as does milk. Skim milk from which the casein has been removed (whey) can be heated in an autoclave at 15 pounds pressure for one hour without noticeable loss of its nutritive properties. It still supplies the water-soluble accessory in active form. Whey from which the albumin has been removed by coagulation can be kept at the boiling temperature for six hours without any appreciable loss in its activity so far as the water-soluble accessory is concerned. Also lactose which has been heated in an autoclave for one hour at 15 pounds pressure, still behaves as does the unheated product in supplying to rations the water-soluble accessory. Heating casein in a moist condition for one hour in an autoclave at 15 pounds pressure destroys its biologic value as a complete protein. Heated casein or heated milk powder are shown to have little if any toxicity. The deterioration is due to a loss of value of the protein fraction of the ration through changes wrought in the casein.

86. **Abderhalden Reaction.**—In the experiments recorded by the authors practically every serum, whether from a pregnant or a nonpregnant individual, showed protein digestion when incubated with placenta tissue prepared according to Abderhalden. The range of individual variation in proteolytic activity was wide. The range covered by most of the normal serum was, however, identical with that covered by the majority of the pregnant serums. There is a tendency for the results from the pregnant serums to average somewhat higher than those from the nonpregnant. The difference, even in the averages, is not great, however; and the individual variations of both pregnant and nonpregnant serums make the results from both overlap so completely as to render the reaction, even with quantitative technic, absolutely indecisive for either positive or negative diagnosis of pregnancy. Further evidence of nonspecificity is seen in the fact that carcinoma tissue was digested to about the same extent as was placenta. It appears that nearly all human serums can digest certain coagulated tissue proteins to some extent, but that the source and significance of the proteolytic agents, and the influences that cause their fluctuation, remain undetermined.

Journal of Outdoor Life, New York

November, XII, No. 11, pp. 341-370

88 Four Essentials of Sanatorium Treatment. S. Coolidge, Middleborough, Mass.
89 Arrows of Sun. E. Cummings, Hinton, W. Va.
90 Two Morality Interludes for Children. G. M. P. Baird, Pittsburgh.
91 Method of Dealing with Tuberculosis in Public Schools of Toronto, Canada. F. S. Minns, Toronto, Canada.

Kentucky Medical Journal, Bowling Green

November, XIII, No. 12, pp. 507-582

92 Legal Status of Physician and Surgeon. F. Forcht, Jr., Louisville.
93 Relation of Physicians to Public; to Each Other and to Patient. J. W. Kincaid, Catlettsburg.
94 Plea for Uniformity of Treatment in Undoubtedly Surgical Diseases. J. G. Gaither, Hopkinsville.
95 *Pneumonia in Children. J. Martin, Cynthiana.
96 *Lobar Pneumonia. B. W. Wright, Bowling Green.
97 Blood Pressure in Diseases of Eye, Ear, Nose and Throat. J. H. Thorpe, Owensboro.
98 Hip Joint Disease. W. L. Mosby, Bardwell.
99 Puerperal Eclampsia. W. H. Strother, Owensboro.
100 Case of Cholelithiasis Simulating Gastric Ulcer. C. C. Turner, Glasgow.
101 Why We Should Attend County Medical Meeting. E. G. Thomas, Benton.
102 Significance of Albumen in Urine. J. T. Dixon, Owensboro.

95 and 96. Abstracted in THE JOURNAL, October 16, p. 1397.

Lancet-Clinic, Cincinnati

November 13, CXIV, No. 20, pp. 425-444

103 Physician; His Profession. E. O. Smith, Cincinnati.
104 Some Medical Problems. F. T. Murphy, St. Louis.
105 Conditions of Efficient Research in Dementia Praecox. B. Holmes, Chicago.

Medical Record, New York

November 20, LXXXVIII, No. 21, pp. 857-902

106 *Prognosis in Cardiovascular Diseases. T. E. Satterthwaite, New York.
107 Clinical Psychology in Its Relation to School and to Social Medicine. J. V. Haberman, New York.
108 *Significance of Presence of Acid-Fast Bacilli in Feces of Patients Suffering from Joint Disease. H. Keller and A. J. Moravek, New York.
109 Symptomatic Psychosis of Renal Type; Report of Two Cases. E. S. Brodsky, Westport, Conn.
110 Subdeltoid Bursitis; Report of Cases. S. Kleinberg, New York.
111 Inebriate Hospitals; Historical Note. T. D. Crothers, Hartford, Conn.

106. Prognosis in Cardiovascular Diseases.—Satterthwaite emphasizes the fact that no matter what the nature, location and extent of a valvular disease, the prognosis does not depend so much on the valve affection itself as on the condition of the myocardium. Complications must be taken into account. Among the most important considerations are the station in life occupied by the patient, his temperament, his occupation and his environment. The method of treatment has an important bearing on the prognosis. Blood pressure has much to do with the prognosis. A high blood pressure is a bad sign, even in the absence of interstitial nephritis. When the high pressure can be relieved by an appropriate dietary, laxatives and suitable medication, the danger to life is lessened, but even if the pressure has been reduced to the standard for the individual, it is still not a guarantee against arterial hemorrhage, though the expectation of life is improved. In all persons subject to high pressure, there is especial danger of cerebral hemorrhage or heart failure; for, even if the coronary arteries are not involved, increased pressure indicates that the heart is doing more than its normal quantum of work. So far as interstitial nephritis is concerned, Satterthwaite says, it need not necessarily be a bugbear. The most important sign of the approaching end is cardiac weakness that cannot be controlled by ordinary dosage with the group of remedies of which digitalis is the chief. The conditions of the arterial system must always be taken into account in making a prognosis.

108. Presence of Acid-Fast Bacilli in Feces.—As a result of their experimental and clinical investigation lasting over a year, Keller and Moravek believe (1) that the acid-fast bacillus found in the feces resisting the decolorization with 25 per cent. nitric acid, water solution, followed by alcohol (80 per cent.), is a tubercle bacillus and nothing else; (2) that the same acid-fast bacillus is viable, able to grow on culture media, and (3) that when those cultures are injected into guinea-pigs they produce tuberculosis. The result of this investigation was as follows: Active tuberculosis of joints, 42; tubercle bacilli in feces, 30; tubercle bacilli in urine, 2. Cured cases of joint tuberculosis, 6; tubercle bacilli in feces, 0; tubercle bacilli in urine, 0. Dubious cases of joint tuberculosis, 9; tubercle bacilli in feces, 1; tubercle bacilli in urine, 0. Of the dubious cases 3 turned out to be luetic infections; 1 was found to be suffering from a gonorrheal arthritis; 1 was shown to be an ordinary sprain of the knee joint; 2 cases are still doubtful; 1 case was lost sight of. The patient in whose feces acid-fast bacilli were found turned out to be suffering from tuberculous (active) arthritis of right hip. Control cases, 18; tubercle bacilli in feces, 0; tubercle bacilli in urine, 0. The above figures show that under normal conditions there are no acid-fast bacilli in the feces, also that only in active cases of joint disease are they present in the alvine discharges, and not in cured cases, and therefore the finding of the acid-fast bacilli in the feces in cases suffering from an active disease of a joint, and no active tuberculosis of any other part of the body, is of great significance in reaching a diagnosis in an obscure case.

New Jersey Medical Society Journal, Orange

November, XII, No. 11, pp. 533-584

112 Bone Grafting and Arthroplasty. G. H. Sexsmith, Bayonne.
113 Epilepsy with Special Reference to Heredity. D. F. Weeks, Skillman.
114 Institutional Care of Epileptics. D. S. Renner, Skillman.
115 Palinphrasia in Epilepsy; Report of Cases. L. F. Robinson, Skillman.
116 Difficulties Attending Treatment of Fractures in Epileptic. H. M. Chandler, Skillman.
117 What Dentistry Means to Epileptic. R. D. Ribble, Skillman.
118 What Field Worker Does and What She Finds. D. L. F. Brown, Skillman.

New York Medical Journal

November 20, CII, No. 21, pp. 1025-1072

119 Study of Drug Action. T. J. Mays, Philadelphia.
120 Lymphatic Obstruction. A. L. Benedict, Buffalo.
121 Parapsoriasis. F. Wise, New York.
122 Case of Kerion Complicated by an Abscess. J. Grossman. New York.
123 Artful Acarus. W. P. Cunningham, New York.
124 Proliferating Tuberculous Cystitis; Report of Three Cases. M. Laverrière, Lyons, France.
125 Chronic Urethritis, Gonorrheal and Postgonorrheal. A. Strachstein, New York.
126 Case of Acute Otitis Media in Seventeen Months Old Child. C. H. Smith, New York.
127 Potassium Permanganate in Examination of Cerebrospinal Fluid. A. I. Rubenstone, Philadelphia.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

October 30, II, No. 2861, pp. 629-664

1 Wound Infections and Their Treatment. (To be continued.) A. E. Wright.
2 Functional Murmurs and Irregularities of Heart. J. F. Goodhart.
3 Recruit's Heart. A. Morison.
4 *Effect of Exertion on Circulation. J. M. Macphail.
5 *Rapidity of Pulse Dependent on Persistent Disturbance of Vasomotor Mechanism. K. Boney.
6 Escape of Ventricle, in Association with Cerebrospinal Fever. J. D. Windle.
7 Successful Early Operation in Wound of Small Intestine. J. H. Stephen.
8 Some Cases of Head Wounds. H. H. Taylor.
9 Manufacture of Aseptic Hospital Furniture. J. L. Stretton.

4. Effect of Exertion on Circulation.—Exertion, according to Macphail, causes a rise in systolic pulse pressure, though a general vasodilatation may nullify this effect. There is always a lowering of diastolic pressure. In heart disease with failing compensation the fall in diastolic pressure is most pronounced; and there is often an almost complete absence of the predicrotic wave, pointing to a diminished systolic pulse pressure.

5. Rapidity of Pulse.—Twenty patients examined by Boney when first seen all presented the same general characters—a tired, listless expression, fatigue on walking a few yards or after a few simple exercises, and in one or two cases undue shortness of breath after any such slight exertion. In no case was any complaint made of pain, palpitation, or other subjective symptom. With possibly one exception there was no evidence of dilatation of the heart in any of them. None presented signs of hypertrophy. In every patient the position of the apex beat was within the nipple line. The cardiac impulse was not forcible or heaving, in fact, in some cases it was so weak as to be difficult of localization. The heart sounds were normal in character and correctly spaced. Accentuation of the pulmonary second sound was absent and no reduplication was observed. No form of irregularity was present.

With regard to the character of the pulse, in every patient except one the rate was normal while lying down. The volume was good, and no irregularity in rate or force could be detected by the finger. The tone of the vessel wall appeared good, but as a certain number of them showed thickening of the vessel wall (in five of them it was marked, although no cardiac hypertrophy was present) it is difficult to generalize about this. Blood pressure in the radial measured by a Riva-Rocci manometer varied from 120 mm. to 140 mm. Hg. In no case was there any dicrotism. On slowly assuming the erect position, in six patients only did the pulse keep within what was considered normal limits. In the remaining fourteen the rate was enormously increased, in some cases going up to 130 or even 140—in one case to 156. In the six cases to which exception was made on standing up

the rate was increased by 15 to 25 beats a minute. There was a trace of albumin in one specimen of urine only. Other evidence of vasomotor instability was to be found in various circulatory disturbances exhibited in some cases. Cold hands and feet, even when warmly wrapped up in bed, were commonly noted, and in two patients flushing of the face was so marked as to be spontaneously remarked on by an independent observer. A "tache" could be obtained in two cases. Boney believes that everything points to a central lesion of the controlling nervous mechanism.

Edinburgh Medical Journal

November, XV, No. 5, pp. 385-384

10 Dangers of Artificial Pneumothorax. H. de C. Woodcock.
11 Roentgenography of Thorax in Children. J. S. Fowler.
12 Analysis of Sixteen Cases of Chorea and Motor Tic. J. E. Middlemiss.
13 Case of Congenital Desmoid Tumor of Rectus Sheath in Infant. D. M. Greig.
14 Two Cases with Multiple Intracranial Complications of Chronic Suppurative Otitis Media; Recovery After Operation. J. S. Fraser and W. R. Logan.

Indian Medical Gazette, Calcutta

October, L, No. 10, pp. 361-400

15 Report of Lady Hardinge Hospital, Brockenhurst, England, January 20 to June 15, 1915. F. F. Perry.
16 St. John Ambulance Association. O. St. John Moses.
17 Treatment of Kala-Azar by Tartar Emetic Intravenously and Inunctions of Metallic Antimony. L. Rogers.
18 Treatment of Kala-Azar with Tartar Emetic. E. Muir.
19 Outbreaks of Epidemic Dropsy in Mofussil. S. L. Sarkar.
20 Cholera Experiences. R. Bryson.
21 New Method of Gastro-Enterostomy. D. John.
22 Case of Hydrophobia with Incubation of One Year. K. K. Das.

Lancet, London

November 6, II, No. 4810, pp. 1009-1062

23 Wound Infections and Their Treatment. (To be continued.) A. E. Wright.
24 Nervous Affections of Sixth and Seventh Decades of Life. (To be continued.) J. M. Clarke.
25 *Experiences in Operative Treatment of Gunshot Injuries of Nerves. F. Eve and R. S. Woods.
26 *General Surgery of Gunshot Wounds of Nerves. W. Trotter.
27 Cavernous Angeioma in Wall of Left Auricle. R. F. Manifold.
28 Case of Optic Neuritis Following on "Gassing." G. Finch.
29 Experiences in Serbia, 1914 to 1915. J. T. J. Morrison.

25. **Operative Treatment of Gunshot Injuries of Nerves.**—Twenty-eight patients were operated on by Eve of which twenty-one were due to bullet and six to shrapnel or shell wounds. As regards the distribution of the lesions, five were injuries of the brachial plexus, eight of the musculospiral nerve, one of the posterior interosseous nerve, five of the ulnar, two of the median and ulner nerves together, and seven of the sciatic or external and internal popliteal nerves. In six cases the injured nerve or nerves were completely divided. The sciatic nerve was divided three times; the other nerves divided were the median and ulnar together in one case, and the musculospiral and posterior interosseus once each. In one instance the sciatic nerve was perforated with incomplete division of the external popliteal portion. The period elapsing between the receipt of the wound and the operation was often considerable. This period in all but four cases was three months or over; of the remainder, the shortest period was seven weeks. In the absence of evidence of improvement, and if the electrical reactions indicate a severe injury of the nerve, the authors are of the opinion that an operation should be performed as soon as the condition of the wound permits of its being carried out aseptically.

The chief point in the operative treatment of these nerve lesions is to determine whether simply to separate the injured nerve from the surrounding tissues or to resect it, and this is of greater importance owing to the fact that anatomic division is comparatively rare. In cases in which doubt exists as to the advisability of resection, an indication of the amount of damage may be sometimes furnished by blunt dissection of the nerve bundles from above into the cicatrix, to ascertain if they are continuous across it.

26. **Surgery of Gunshot Wounds of Nerves.**—So far as experience seems to show us at present the most important points in the technic of nerve resection, Trotter says, are free excision, exact coaptation, careful insulation, and perfect asepsis. Muscular relaxation before and after the operation is, perhaps, equally important.

Practitioner, London

September, XCV, No. 3, pp. 281-448

30 Value of University Training as Professional Asset. T. C. Allbutt.
31 How Is Medicine as Profession for Women Affected by War? J. Walker.
32 Professional Secrecy. W. A. Brend.

November, XCV, No. 5, pp. 589-728

33 An Appeal for More Extended Use of Whole Milk in Artificial Feeding of Infants. C. W. Vining.
34 *Gastric Roentgenoscopy in Children. L. Willox.
35 Recent Work in Diseases of Lungs. A. J. Jex-Blake.
36 Cerebrospinal Fever. T. H. C. Benians.
37 *New Operation for Relief of Pruritus Ani. I. Back.
38 Practical Hints on Removal of Tonsils and Adenoids. D. Guthrie.
39 Value of Blood Examination in Acute Disease. J. F. Rey.
40 Some Practical Hints on Removal of Superfluous Hair by Electrolysis. L. W. Bathurst.
41 Tragedy of Glycosuria. K. Robertson.
42 The Thyroid. H. R. Unwin.
43 Three Cases of Gallstones, Rarity of Condition in Trinidad, B. W. I. R. Scheult.

34. **Gastric Roentgenoscopy in Children.**—Willox found that the shape of the stomach with contents in children is not a fixed one, but presents many differences during the process of digestion; the same stomach may show different forms at different times. As a rule, in infants the shape is more or less globular, becoming elongated as the child grows older; so that in many cases in the older children the stomach, when examined immediately after the ingestion of a meal, is somewhat "F" shaped, and has some resemblance to a Dutchman's wooden shoe. The foodstuff of which a meal is composed does not in itself seem to have much, if any, effect on gastric motility. The important thing is the degree of fluidity of the meal; the more fluid a meal is, the more quickly it will pass through the stomach. The stomachs of older children empty quite as quickly, on an average, as those of younger children, if a meal similar in bulk and consistence is given. Practically as soon as the meal has been taken, while in others there seems to be a resting stage before peristalsis commences. The average time for the stomach to become empty was three and three-quarter hours, and the majority emptied in from three to four hours.

37. **Operation for Relief of Pruritus Ani.**—Back makes the same incision on each side of the anus, as in Ball's operation, but instead of dissecting up a flap he cuts down into the tissues of the ischiorectal fossa, and divides the inferior hemorrhoidal artery. One point in technic Back regards as important—to unite the cut edges with Michel's clips. Remove the clips on the fourth day; do not give a purge until the clips have been removed, in order to minimize the risk of infection of the wound.

Sei-I-Kwai Medical Journal, Tokyo

October, XXXIV, No. 10, pp. 49-52

44 Treatment of Ulcer of Stomach, Especially of Hemorrhage. Y. Miura.
45 Cure of Syphilis and Its Recurrence. K. Asahi and G. Murasawa.
46 Present Conditions of Treatment of Suppurative Meningitis. K. Kuribayashi.
47 *New Treatment of Acute Gonorrheal Epididymitis. Y. Murata.
48 Two Cases of Rat-Bite Treated by Salvarsan. Z. Oda.

47. **Treatment of Gonorrheal Epididymitis.**—Murata injected 30 gm. of calcium salt solution intravenously with success. After injection, pain disappeared and no hard induration was left behind.

Archives des Maladies du Cœur, etc., Paris

October, VIII, No. 10, pp. 317-360

49 *The Causes, Direct and Indirect, of Insufficiency of the Heart. H. Vaquez.

49. **Causes of Heart Insufficiency.**—Vaquez' long article reviews the numerous causes which may modify the circulation beyond the power of the heart to overcome, especially with preexisting organic trouble. He cites a few clinical examples to illustrate the various types described. Acute

insufficiency after extreme exertion is probably due to acute dilatation. The question whether overexertion can bring on acute dilatation is particularly important on account of legislation on workmen's compensation. It has been claimed that overexertion entailing acute dilatation merely exaggerates the phenomenon normally induced by ordinary effort. Vaquez insists, however, that this is not the case. Physical effort tends rather to reduce than to increase the size of the heart. He agrees with Raab that dilatation following physical exertion occurs only when the resisting power of the heart has been weakened by preceding infection or intoxication or an organic lesion. When angina pectoris develops suddenly after exertion, or cardiac insufficiency such as Da Costa observed in young soldiers of the Civil War, or exhaustion of contractility such as Münziger discovered in woodchoppers, syphilis or the strain of a military campaign or excessive beer drinking can usually be incriminated. Organic lesions in the left heart are particularly liable to acute insufficiency. He recently witnessed acute pulmonary edema develop in a young physician with a lesion of the aorta, perfectly compensated hitherto, after violent efforts to crank his automobile.

Errors in diet are also liable to bring on acute insufficiency of the heart, but not by solid food. An overhearty meal may cause palpitations and transient discomfort, but not actual cardiac insufficiency. This, however, can be induced by drinking large amounts of fluids. This is frequently the cause of serious mishaps in persons whose kidneys are not working properly at the time. It occurs mostly with mitral lesions and during asystolia. Reduction of the intake of fluids is an important factor in the management of such cases, and is even more indispensable with generalized lesions of the arterial system or high blood pressure with renal sclerosis. The danger from drinking too much fluid is particularly serious in these cases. It may entail sudden distention of the heart. Until physicians at watering-places learned to caution their patients not to drink too much of the waters, acute pulmonary edema was of comparatively frequent occurrence among those drinking glass after glass of the waters.

Salt is liable likewise to bring on acute pulmonary edema, especially with both heart and arterial affections, as the kidneys are usually more or less impaired in these cases. With simple valvular lesions, the immoderate use of salt may bring on the cardiac insufficiency more gradually, but in time the whole picture is presented. This may occur with the patient in bed and not exposed to physical exertion. After transient exhaustion of contractility of the left ventricle conditions may right themselves and the kidney eliminate salt as in normal conditions. But unless certain of this, the intake of salt should be regulated.

Heat and cold are not borne well by persons with unduly high blood pressure. Cerebral hemorrhage and acute dilatation of the heart, with pulmonary edema, are most common and most fatal in the winter in persons with arterial hypertension. Extreme heat, Turkish baths, are liable to elicit the first manifestations of heart disease or bring on fatal aggravation. The rapid heart action under the influence of fear or anger imposes extra work on the heart, but Vaquez remarks that cases in which emotional factors alone have brought on cardiac insufficiency are quite exceptional. He reviews, further, the extracardiac affections liable to induce insufficiency on the part of the heart. In fact, he says, there is no organ that may not influence the heart in some way. Recent research has shown infiltration of fat in the region of the bundle of His in cases of permanent bradycardia, thus confirming the assumption of Adams (1827) and Stokes (1846) that fat deposits might be responsible for the pathologically slow pulse.

Archives de Médecine des Enfants, Paris

September, XVIII, No. 9, pp. 461-516

50 *Orthostatic-Lordotic Intermittent Albuminuria in Children. (L'albuminurie posturale de l'enfance.) L. Jeanneret.

51 Treatment of Tetanus by Subcutaneous Injections of Antitetanus Serum. J. Comby.

50. **Intermittent Albuminuria in Children Usually Brought on by Keeping Still.**—Jeanneret remarks that Stirling was the first to call attention to intermittent albuminuria in children in connection with the position of the body, and he styled it "postural albuminuria." Jeanneret declares that this is the best name for it, as neither the orthostatic nor the lordotic attitude ever induce it except in the predisposed. The extreme lordosis which is induced by Rollier's pillow in heliotherapy of Pott's disease was borne by children at Leysin over long periods without their developing albuminuria. Jeanneret has also examined numbers of children with spontaneous extreme lordosis and no albuminuria was observed in them at any time. In still further tests, he had all the children in the Childrep's Hospital at Basel lie on Rollier pillows but albuminuria was scarcely ever observed from the extreme lordosis thus induced.. This was the more remarkable as the children in the hospital were all more or less debilitated. On the other hand, 20 per cent. of the children in school present intermittent albuminuria. Numerous tests were made in different cases. One child of 11 had no albumin in bed on a milk diet, none in bed on a mixed diet, none in three hours of extreme lordosis induced with the Rollier cushion, none playing in the garden, and none during half an hour standing erect but stepping from leg to leg or otherwise exercising the legs. Albumin, however, appeared in the urine in three minutes after the child stood erect in extreme lordosis and kept perfectly still. There was 1 per cent. the third minute; 2 per cent. the fifth; 3 per cent. the fifteenth, and 10 per cent. by the thirtieth minute.

Further tests confirmed the importance of the factor, keeping still, in the genesis of intermittent albuminuria, when this factor was superposed even on moderate lordosis. Of the 204 children examined, albuminuria could be induced by lordosis alone in only 3 per cent., and by a change from the seated to the erect posture (orthostatism) only in 1.3 per cent. Both together, the children not keeping still, induced albuminuria only in 1.6 per cent. But the combination of lordosis, orthostatism and muscular immobility induced more or less albuminuria in 49 per cent. The findings in the various groups are listed in detail in twelve tables. They show that the restlessness of children responds to a physiologic demand, and that children should not be expected to sit still in school. The school desk should be arranged to avoid inducing lordosis. The "negative" distance between bench and chair gave albuminuria in 34.4 per cent. of the children. He declares that the "zero distance" is the ideal for desk and bench, thus protecting against malposition of the spine and not inducing albuminuria. He explains the anatomic and physiologic conditions, with illustrations, which are liable to start the albuminuria when the normal play of muscles and the local circulation are checked in children by keeping motionless.

Bulletin de l'Académie de Médecine, Paris

October 5, LXXIV, No. 40, pp. 341-376

52 *Sodium Hypochlorite in Abortive Treatment of Infection of Wounds. Carrel, Dakin and others.

53 * Mumps Plus Epidemic Meningitis. (Oreillons et méningite cérébro-spinale.) P. Sainton and J. Bosquet.

October 12, No. 41, pp. 377-428

54 Formation of Blood Corpuscles from Hematoblasts in Pigeons and Poultry. (De la formation du sang sur les cellules vasoformatives des oiseaux.) G. Hayem.

55 *Serotherapy of Acute Poliomyelitis; Thirty-Two Cases. A. Netter.

56 Suture of Completely Severed Spinal Cord. (Note sur un cas de retour partiel de la motilité volontaire survenu après suture de la moelle épinière complètement sectionnée par un éclat d'obus—intervention pratiquée 130 jours après le traumatisme.) Lortat-Jacob, E. Girou and Ferrand.

52. **Abortive Treatment of Wounds.**—This method of treating wounds has been described in these columns recently, October 2, p. 1221. The work issues from the Rockefeller Foundation laboratory and hospital at Compiègne. Carrel states that with it infected wounds were completely sterilized and could be closed like an aseptic wound. For this, however, the hypochlorite must reach every remotest crevice of the

wound. Even when this has not been realized, the infection is considerably diminished by the applications.

53. **Mumps and Meningitis.**—In the case described, the clinical picture of the mumps was unmistakable when, the seventh day, meningitis developed. It was regarded at first as merely the involvement of the meninges in the mumps process, but meningococci were cultivated from the spinal fluid and antimeningitis serum soon cured the patient. The fluid drawn by lumbar puncture was nearly clear, which seemed to confirm the assumption that the meningeal symptoms were due to the mumps. Certain cases reported as such in the literature must have been in reality cases of the combination of the two diseases.

55. **Epidemic Poliomyelitis.**—Netter devotes six pages to tabulation of the details of thirty-two cases of epidemic poliomyelitis with the modifications induced by intraspinal serotherapy. These and the return of symptoms when it was suspended too soon, demonstrate the efficacy of the measure, he reiterates.

It not only arrests the progress of the paralysis but makes it retrocede to a complete cure, as a rule, on condition that the serotherapy is applied early enough, that is, from the first to the fourth day of the paralysis. The serum was derived from persons who had had the disease within six weeks up to twenty-nine years; the average interval was five years. The serum seems to retain its specific properties for more than thirty years. He sterilizes the serum by tyndallization, and injects from 5 to 13 c.c. into the spinal canal for eight days in succession, on the average. It is better tolerated by the spinal canal than horse serum, but still it evokes an inflammatory reaction, with sometimes transient fever and pains. In his 32 cases the cure was complete and rapid in 6; improvement approximating a cure in 3; 7 were very much and 5 considerably improved. In 5 others the influence of the serum was questionable, and in 3 no modification was apparent. In 7 cases the bulb was involved and these all terminated fatally, as also one other case. It is possible that monkey serum may prove to answer for therapeutic purposes, although the disease seems to be more serious in them even than in man, and they are liable to succumb early to it.

Paris Médical

V, No. 14, pp. 245-260

57 *Potato Bread in France After the French Revolution. (Pain économique; pain de pommes de terre; pain K.) E. Maurin.
58 Autoregulating Extension Device for Compound Fracture of the Femur. L. Senlecq.
59 *Phenol Treatment of Gas Gangrene. Mencière.

Nos. 15-16, pp. 261-304

60 *Orthopedic Surgery for the Wounded. A. Mouchet.
61 Artificial Legs on the Market; Amputation of Half of the Thigh. (Etude critique des appareils français pour amputations de cuisse à la partie moyenne.) Ducroquet.
62 Open Plaster Casts with Extension. (Les appareils platrés à anses pour le traitement à l'ambulance des fractures ouvertes et arthrites suppurées.) M. Lance.
63 Peritoneum Sheath (from Herniotomies) to Isolate Nerves and Tendons. L. C. Bailleul.
64 Vocational Training for Crippled Soldiers. (De la réadaptation et de la rééducation au travail des blessés et des mutilés de la guerre.) Borne.
65 Training Crippled Soldiers to Regain Use of Their Limbs. (La rééducation des mouvements chez les blessés de guerre.) P. Kouindjy.
66 Repair of the Jaws After Mutilating Wounds of the Face and Jaws. (Prothèse restauratrice.) L. Frey.

No. 17, pp. 305-320

67 Exercises for Stiff Joints. (La mobilisation; applications au traitement des blessures de guerre.) H. Somen.
68 Fulminating Perfringens Septicemia After Small Shell Wound. Lévy, Cotte and Latarjet.
69 Minor Wounds of the Skull. (Embarrures et lésions durc-mériennes.) J. Fieve.
70 Heliotherapy for the Wounded. (Cure de soleil et chirurgie de Guerre.) P. E. Morhardt.

57. **Potato Bread.**—Maurin quotes from an old French work directions for making bread of half wheat and half potato flour. A very palatable bread can be made, he says, by following the directions given, baking small loaves, and using less heat than for ordinary bread. This admixture of potato was recommended for reasons of economy during the years of poverty that followed the French revolution.

59. **Phenol Treatment of Wounds.**—Mencière pours phenol freely into the wound and then rinses it out with alcohol, and is convinced that this heroic measure has saved many men in his charge not only from amputation but has saved lives as well. He has seen it arrest gas gangrene already under way, and he advocates "phenolization" as a life-saving measure when the wound is deep, soiled and of a bad aspect. The phenol works down deeper than other antiseptics. After rinsing out the phenol with alcohol, he applies an embalming mixture of 10 gm. each of iodoform, guaiacol, eucalyptol and 90 per cent. alcohol, with 30 gm. Peruvian balsam and 10 c.c. ether. He uses 9 parts phenic acid crystals dissolved by 1 part alcohol—only just enough to liquefy them. He fills the wound up with this, and with small tampons works it into all crevices. After one minute, or a minute and a half in gas gangrene, he rinses it out with alcohol, using three or four liters, and then applies the embalming fluid or the same with ten times the amounts of ether and alcohol.

60. **Orthopedic Surgery in War.**—This entire number is devoted to orthopedics and protheses for wounded soldiers and training to "uncripple the cripples," that is, to enable them to be self-supporting. Each article is profusely illustrated.

Presse Médicale, Paris

October 25, XXIII, No. 51, pp. 417-424

71 Fractures of the Lower Jaw in War; Anatomic Conditions. L. Imbert and P. Réal.
72 Gelose-Glucose-Lead Culture Medium Differentiates Typhoid and Paratyphoid A and B Bacilli. P. P. Lévy and P. Vallery-Radot.

October 28, No. 52, pp. 425-432

73 Treatment of Psychoneuroses in the Active Army. (Psychonévroses de guerre.) Grasset.
74 Early Sterilization of Wounds with Superheated Air or Oxygen. H. L. Reverchon, Vignat and Vaucher.

Berliner klinische Wochenschrift

October 25, LII, No. 43, pp. 1105-1128

75 Causes and Cure of Itching. (Entstehung und Beseitigung des Juckens.) P. G. Unna. Commenced in No. 42. Continued.
76 *The Viscosity of the Urine. C. Posner.
77 Clinical and Bacteriologic Findings in Dysentery Plus Typhoid. (Mischinfektionen von Ruhr and Typhus.) M. Soldin.
78 Infectious Diseases in the Active Army. (Meine Kriegserfahrungen über Infektionskrankheiten.) Grundmann. To be concluded.
79 Roentgen Localization of Foreign Bodies. (Zur Methodik der Fremdkörperlokalisation.) R. Fürstenau. (Erwiderung.) W. Salow.
80 Medical Aspects of War: Historical Sketch. (Historisches zur Kriegsmedizin in Frankfurt a. M.) W. Hanauer. Commenced in No. 42.
81 Legal Decisions Affecting Physicians. (Aerztliche Rechtsfragen.) H. Lieske.

76. **The Viscosity of the Urine.**—Posner remarks that it is a comparatively simple matter to determine the viscosity of the urine in comparison to examining that of the blood. Neither sugar nor albumin in the urine seems to affect its viscosity in the least, but the blood corpuscles display a marked tendency in this respect, especially the whites, and tube-casts even more than the blood cells. The viscosity increases with the concentration of urine, and measures to increase diuresis not only ward off production of concrements by rinsing out the kidney and urinary passages, but have a still further beneficial action by reducing the concentration of the urine. The benefit in lithiasis from courses of alkaline mineral waters is explained by the lowering of the viscosity of the urine under their influence.

Correspondenz-Blatt für Schweizer Aerste, Basel

October 23, XLV, No. 43, pp. 1345-1376

82 *Extrapleural Pneumolysis, Supplemented by Injection of Paraffin; Three Cases. (3 Fälle von extrapleuraler Pneumolyse mit sofortiger Plombierung nach Baer.) F. Oeri.

82. **Pneumolysis Plus Injection of Paraffin.**—Oeri has applied in three cases of pulmonary tuberculosis Baer's method of compressing the lung by injection of paraffin. The

lung is first detached from all connection with the wall, working through the small hole made by partial resection of a rib. The pleura is separated with the lung, the pneumolysis thus being done between the costal pleura and the endothoracic fascia, over the cavity in the lung. The cavity wall is then pushed in to close it up completely and the space left between the costal pleura and the chest wall is filled in with a paraffin mixture which is still kneadable at body temperature. The incision is then sutured. The aim is practically the same as that of artificially induced pneumothorax, but the filling technic can be applied when conditions prevent effectual therapeutic pneumothorax. The operation and filling are done under local anesthesia; there is too much danger of aspiration of crushed lung tissue for general anesthesia to be used. Among the advantages are the exact dosage, the limiting of the compression directly to the cavity area, and the fact that no repeating is necessary. The experiences were all favorable in the three cases reported, and Oeri thinks that this should outweigh the theoretical objections to this technic. The three cases are described in detail, with illustrations. One patient was a delicate young woman who for four years had had an apical process with cavity, profuse expectoration, slight hemorrhage and periods of fever. Since the paraffin was injected, fifteen months ago, she has regained her earning capacity, and except for a brief set-back in the winter, has been free from fever and almost free from sputum. The second patient was a young man with signs of pulmonary tuberculosis since 1909. As the cavity was obliterated and held compressed by the paraffin, the drain on his health from the suppuration was arrested and with it the effects of toxic action, the fever and the cyanosis subsiding. Both lungs had cavities but by obliterating the one large cavity conditions were materially improved, and the lung processes have shown no progress during the twenty-one months since. In the third case, the large cavity was in the lower lobe and had not shown much if any benefit under a year's treatment in a sanatorium. The man of 27 was subject to hemorrhages, increasing in severity, with fever and much expectoration. He has now apparently regained his earning capacity and is free from all disturbances. No damage seems to have resulted from the filling in any case. In each instance an ineffectual attempt had been previously made to induce a pneumothorax.

Münchener medizinische Wochenschrift, Munich

October 19, LXII, No. 42, pp. 1417-1452

83 *Colorimeter in Quantitative Analysis. (Ueber kolorimetrische Bestimmungsmethoden: die quantitative Bestimmung von Harneiweiss. X.) W. Autenrieth and F. Mink.
84 *Roentgen Treatment of Venereal Bubo. K. Kall.
85 Slight Hematuria with Sound Kidneys Before Onset of Spasmodic Stage in Four of Five Cases of Whooping-Cough. (Befund von Erythrozyten und Erythrozytenzylindern im Harn bei Keuchhusten vor Ausbruch des spasmodischen Stadiums.) F. Kornmann.
86 Swallowed Tooth Plate Ejected under the Influence of Subcutaneous Injection of an Emetic. (2 Fälle von verschlucktem Gebiss, geheilt durch subkutane Apomorphininjektion.) Gerstein.
87 Progress in the Physics of the Roentgen Rays. A. Sommerfeld.
88 Wounds of the Skull. (Richtlinien in der Behandlung der Schädeltangentialschüsse.) M. Wilms. (Ueber den zerebellaren Symptomenkomplex in seiner Bedeutung für die Beurteilung von Schädelverletzten.) K. Goldstein.
89 Heart Disturbances in Soldiers. (Die Herzkrankheiten und Herzstörungen der Soldaten im Felde.) E. Schlesinger.
90 Broad Cotton Rings Veiled with Gauze for Open Treatment of Wounds. (Offene Wundbehandlung mit Zellstoffmullringen.) Lörcher.
91 Orthopedic Appliances for the Wounded. III. (Arbeitsschiene für Radialislähmung.) A. Heymann.
92 Treatment to Loosen Up and Counteract Cicatricial Contracture. (Ueber erweichende Behandlung.) J. Fränkel. Commenced in No. 41.

83. **The Colorimeter for Determination of Albumin in Urine.**—In this tenth communication on colorimetry, Autenrieth and Mink give the quantitative findings in regard to the albumin in the urine in eleven cases as tested by various technics. With the gravimeter and the colorimeter the figures were respectively 2.812 and 2.86 per thousand; 1.16 and 1.15; 3.86 and 3.88; 2.8 and 2.8; 3.22 and 3.43; 0.962 and 0.91; 0.392 and 0.35; 1.24 and 1.26; 0.424 and 0.47; 4.36 and 4.47; 2.08 and 2. These figures confirm the precision of the colorimeter technic. They give the minute details of their technic as adapted for the general practitioner. They refrain from boiling the urine directly, but heat it for five minutes in boiling water. A number of minor points are mentioned that facilitate the test.

84. **Treatment of Venereal Bubo with Roentgen Rays.**—Encouraged by the benefit from roentgenotherapy in tuberculous glandular disease, Kall has been applying it in treatment of venereal bubos during the last eighteenth months. The results have been so good that he urgently advocates this method in their systematic treatment, especially in the early stages before much inflammation has developed. The treatment is more successful before there is suppuration; the pain subsides and the patient is able to go about without disturbances of any kind from this source. Even after fluctuation has set in, the leukocytes are destroyed by the Roentgen rays and all are apparently absorbed. The fluctuation, the pain and the redness all disappear, and the infiltration gradually retrogresses, but the spot is left pigmented. Even indolent syphilitic bubos respond promptly to the Roentgen ray. Developed abscesses have to be evacuated with an incision, but the secretion ceases and the abscess heals quicker under exposures afterward. Doses of 10 or 20 X are ample for the purpose, with a 0.5 mm. aluminum filter.

Wiener klinische Wochenschrift, Vienna

September 30, XXVIII, No. 39, pp. 1049-1072

93 Experiences with Typhus. (Flecktyphus.) L. Detre.
94 *Spontaneous Agglutination of Blood Corpuscles in Malaria. (Spontane Hämagglutination.) R. Biglieri.
95 The Urochromogen Reaction a Valuable Differential Sign of Typhoid. (Die Urochromogen-Reaktion Weiss im Harne bei Typhus abdominalis.) V. Svestka.
96 Technic for Production of Bacterial Vaccine. (Bakterienimpfstoff-Herstellung.) O. Löwy.
97 *Disturbances in Micturition After Getting Chilled. (Versuch einer Analyse der Miktionsanomalien nach Erkältungen.) O. Schwarz.
98 Detection of Simulation of Deafness by Mouth-Reading Exercises. (Entlarvung von Taubheit und Schwerhörigkeit Simulierenden.) J. Kindlmann.
99 Emergency Extension Device Made from Four Guns for Fracture of Femur. (Ein transportabler Streck-Hänge-Verband für Oberschenkelschussfraktur.) H. H. Schmid.

October 7, No. 40, pp. 1073-1100

100 *Vascular Erythema. (Eine bisher nicht beschriebene Dermatose: Erythema vasculosum.) B. Lipschütz.
101 *Contusion of the Abdomen; Three Cases. N. Moro.
102 Subcutaneous Granulomas Secondary to Wounds. K. Wagner.
103 Acute Poliomyelitis in Austria. (Vorkommen der spinalen Kinderlähmung in Oberösterreich in den Jahren 1909 bis 1913.) G. Stieffer.
104 How Cholera Was Stamped Out in Three Days. (Bekämpfung der Choleraepidemie im provisorischen Kriegsgefangenenlager zu K.-S.) L. Detre.
105 Improvised Pasteboard Splint. (Eine Hohlschiene aus Pappendeckel zur Selbstanfertigung geeignet.) C. Springer.

October 12, No. 41, pp. 1101-1128

106 Bacteriologic Diagnosis of Dysentery. G. Salus.
107 "Typhus" in Galicia True Typhoid. (Zur Frage des Flecktyphus auf dem galizischen Kriegsschauplatze.) W. Spät.
108 Roentgen Localization of Foreign Bodies in the Tissues. V. F. Hess.
109 Harmless Pumpkin Seeds More Effectual Than Male Fern in Treatment of Tapeworm. (Ueber Bandwurmkuren.) L. Stefanowicz.
110 *Twenty-Five Cases of Foreign Bodies in Larynx, Trachea or Bronchi. K. Koller. Commenced in No. 40.
111 Experiences While a Prisoner in Russia and During the Escape Through Turkestan. R. Strisower.
112 Prophylaxis of Venereal Disease at Close of the War. Brandweiner.

94. **Spontaneous Agglutination in Malarial Blood.**—Biglieri reports from the Malaria Laboratory at Tucuman (Brazil) that spontaneous agglutination was noted in 158 of 600 malaria cases. The test was positive in 56 per cent. of the 113 tertian malaria cases and in 55 per cent. of the 55 quartan, while it was positive in 63 per cent. of the 103 cases of malaria of the tropical type. The findings were also positive in 54 other cases with symptoms of malaria but no parasites to be found in the blood. This spontaneous agglutination was noted likewise in puerperal septicemia and also in the pregnant women examined. In tuberculosis and

typhoid the response was negative, as in healthy blood. The test was made with Ross' drop method; instead of the drop of blood drying evenly, there is clumping of the blood corpuscles in a few seconds if the phenomenon occurs.

97. **Disturbances in Micturition After Getting Chilled.**—Schwarz has encountered a number of cases of painful or scanty urination or enuresis in soldiers on active service exposed to the vicissitudes of the weather. No organic trouble could be discovered, but the jet was exceptionally powerful. The painful type of disturbances resembled the dysuria with enlarged prostate; in two cases there was complete retention. Analysis of the various cases suggested a probable peripheral infectious nervous affection as the cause of the trouble in some cases. This entailed either hypertony of the detrusor nerve, with consequent incessant desires to urinate and forcible expulsion of the urine, or it entailed paresis of the detrusor and depressed sphincter functioning, thus preventing the normal voiding of the bladder.

100. **"Vascular Erythema."**—Lipschütz discovered among the soldiers in his charge at Przemysl twenty cases of an acutely developing skin affection which was new to him. Red spots appear on the skin resembling the roseola of syphilis, but the minute vessels in the area are extremely dilated and congested. This circumscribed erythema lasts from one to several days; it appears mainly on the chest and back, and displays a marked tendency to recur. One man related that he had had this affection return again and again during the last few years. There was no break in the epithelium, as would have been the case if the efflorescence had been the result of an insect bite. The dermatosis, Lipschütz adds, is most certainly not an inflammatory process nor what is generally called a circulatory disturbance.

101. **Contusion of the Abdomen.**—Moro reports a case of a pseudocyst in the pancreas with recovery after the walls of the cavity had been sutured to the skin to facilitate drainage. The operation followed in about a month after the contusion. Pains in the pancreas region developed after healing of the fractured ribs and arm. The pseudocyst contained 1.5 liters of fluid and continued to secrete profusely for three weeks but recovery was finally complete after cauterization of the fistula. In the second case the spleen had been torn across down into the hilus by the contusion and it was removed. The muscular defense and the free fluid in the abdominal cavity called for the laparotomy. A not long preceding scarlet fever had predisposed the spleen to a rupture as it was nearly twice the normal size and abnormally soft. Seven months later the boy was apparently in perfect health but the leukocytes numbered 12,300 and the lymphocytes formed 30 per cent.; the eosinophils 16 per cent., showing a certain influence on the blood picture from the lack of the spleen.

In the third case there was muscular defense on the right side of the abdomen after the contusion but there were no signs of free fluid and no spontaneous pain except between the shoulders. No vomiting, no urinary derangement, and the shock was transient. The pulse was normal, but this must be regarded as an abnormally slow pulse as after such a contusion the pulse usually runs up. The liver was found crushed and torn, three large and several small pieces having been pried off from the liver by the contusion. Suture was impossible and the man died the seventeenth day after presenting jaundice from the second day.

110. **Foreign Bodies in the Air Passages.**—There was no mortality in the twenty-five cases reported from Chiari's service in the last five years. One patient was a young man into whose throat a coin had slipped over five months before. There was slight coughing at first, but after that not the slightest disturbance, neither in breathing, speaking or swallowing, smoking or singing. A roentgenogram taken the same day showed no trace of the coin and it was supposed to have passed into the stomach. Five months later his throat was painted with iodized glycerin several times as he complained of laryngitis; after a few days there was pain on swallowing. Roentgenoscopy then revealed the edge of the coin visible between the vocal cords where it had evidently been impacted for nearly six months. The first roentgen examination had evidently shown the coin (a *Krone* piece) from the side alone, as a straight line on the median line, and its shadow had been overlooked. As there were no further disturbances from its presence, the suspicion of a foreign body was abandoned. The patients were seen soon after the foreign body had been aspirated in all but eight cases. In one of the latter group a two-teeth piece of a set of false teeth had been in the bronchi for seven years, inducing disturbances ascribed to other causes as the false teeth had been assumed to have passed into the stomach.

The foreign bodies were in the right twice as often as in the left bronchus. In some of the five cases of a foreign body free in the air passages, it could be heard hitting against the vocal cords. In one case the cough was ascribed to recurrence of whooping cough. Direct upper bronchoscopy was applied in twenty-four of the cases but in one the swelling of the bean rendered tracheotomy at once imperative. The extraction was always found easiest with the patient in the dorsal decubitus, possibly with the upper part of the trunk lowered. The suggestion is made that hard smooth foreign bodies, such as glass beads, which it is sometimes so hard to grasp, might drop out of themselves if the patient was under the influence of a general anesthetic and then turned with the head downward. Reflex contraction prevents the dropping out of the foreign body when this is done without general anesthesia, but with the muscles relaxed it might be worth a trial before starting on tracheo-bronchoscopy. Large quantities of phlegm or pus interfered with the extraction in some of the older cases; this was combated by injection of morphin and lowering the head in some of the cases. In one case the tip of the instrument was bent so that it could be introduced into the hole in a bead which kept slipping out of the extracting forceps. The patients were not allowed to talk after extraction of the foreign body, to spare the larynx, and cold was applied externally to the neck, and the food given was all fluid and cold. In five cases tracheotomy became necessary a few hours later, on account of swelling of the mucosa of the subglottic space, and large amounts of secretions were voided through the cannula, after which healing proceeded rapidly. Kofler remarks in conclusion that an elliptical shape for the tubes used in tracheobronchoscopy and esophagoscopy permits a much more spacious lumen than a round tube, especially for children. The curve of an elliptical tube also permits better inspection of the field.

Zentralblatt für Chirurgie, Leipzig

October 23, XLII, No. 43, pp. 769-784

113 *Apparatus for Extension Permitting, from the First, Passive or Automatic Movements of the Joint. (Streckverbandapparat mit passiven Gelenkbewegungen und Streckverbandapparat mit automatischen Gelenkbewegungen.) Ansinn.

114 *Ekehorn's Operation for Prolapse of the Anus. J. Becker.

113. **Extension Apparatus Permitting Exercise from the First.**—Ansinn states that the stiff knee and atrophied muscles encountered so often after a fractured femur has healed, demonstrate the need for exercising the knee from the start. To meet this he has devised an apparatus with a T splint which applies extension to both thigh and leg, leaving the knee free and balanced so that it is easy to raise and lower the part controlling the thigh. The attendants can thus exercise the joint from time to time or the patient can do it himself with a rope and pulley, or it can be kept up day and night by connecting the apparatus with a small electric motor. In the thirty cases in which he has applied this apparatus to date the effect realized has surpassed the highest anticipations, the fracture healing without a trace of ankylosis or muscular atrophy while consolidation was complete exceptionally early.

114. **Ekehorn's Operation for Prolapse of the Anus.**—The technic for this operation was described in THE JOURNAL, June 12, 1909, p. 1966. It was devised for children, but Becker was much gratified at the prompt and permanent cure in the man he has treated with it. A stout silk thread is passed around the anus, just under the mucosa, the ends drawn up

and tied over the sacrum. The thread was left for twenty days, the tampon frequently renewed, and the thread drawn along each time. The aim is to induce an irritation in the passage bored by the curving needle passed around the anus, and kept open by the thread. The slight irritation causes production of enough cicatricial tissue to hold back the prolapse.

Zentralblatt für Gynäxologie, Leipzig

October 23, XXXIX, No. 43, pp. 747-762

113 *Hirschsprung's Disease Preventing Delivery. (Megakolon als Geburtshindernis.) R. T. Jaschke.

115. **Megacolon Impeding Delivery.**—The apparently healthy young woman was at the tenth month of her first pregnancy when she applied for relief from obstipation. A large tumor was found almost filling the small pelvis, and assumed to be an impacted cervical myoma. Under castor oil and enemas the bowels moved daily and the patient seemed in the best health with good appetite. When labor set in the child was delivered by cesarean section, and the tumor was found to be the sigmoid flexure, measuring 60 cm. in circumference, the entire large intestine enormously distended with thickened walls. The patient seemed to be doing well under measures to clear out the megacolon but collapsed the sixth day with symptoms of severe intoxication. Necropsy showed ulceration throughout the colon, but no peritonitis. The suture in the uterus was intact. Notwithstanding the extensive ulceration in the large intestine and the quantities of feces extracted or voided spontaneously, no blood had been visible in the stools; Jaschke thinks that there must have been some chemical decoloring process at work. Whether the megacolon was congenital or acquired is not known, but there was a history of one severe illness in childhood with no movements of the bowels for eight days.

Grèce Médicale, Athens

June 1-15, XVII, Nos. 11-12, pp. 21-24. French Supplement to Iatriki Proodos

116 *Typhoid Pyonephrosis. P. Soubeyran and S. N. Oeconomos. Concluded in No. 13.

August-September, Nos. 15-18, pp. 29-32

117 *Treatment of Parasyphilitic Affections. J. Cecikas.

116. **Typhoid Pyonephrosis.**—Soubeyran and Oeconomos report the case of a youth of 17 who developed right seropyelonephrosis during convalescence from severe typhoid. The kidney was drained with two tubes and conditions apparently righted themselves. Three months later, however, high fever and pyuria, alternating with retention, compelled nephrectomy. The kidney was found distended with pus. The walls were so thin and degenerated that the organ looked like a pig bladder full of pus. The patient promptly recovered after its removal. Records of only six cases of the kind were found in the literature, all but one in men. The pyonephrosis became manifest the thirteenth day in one of the cases, during convalescence in most of the others, and from one to several months later in the rest.

117. **Treatment of Tabes and Paralysis.**—Cecikas relates a few striking cases from his practice to emphasize his statements as to the clinical cure possible in tabes and general paralysis when they are detected early and given vigorous treatment. The increasing proportion of mild and abortive types of these affections may be credited, he remarks, to the more energetic treatment we are now giving syphilis. We know, he continues, "that mercury stored in the tissues gets into the circulation again in waves of elimination, hence its capricious reappearance in the urine, often after prolonged eclipses. Secondary lesions, refractory during the course of treatment, may retrogress during this flux of mercury into the blood, and gradually disappear entirely." He says of salvarsan that as it is precipitated by body fluids, the greater portion fails to have any action until it gets dissolved again. In order to augment the action on the parasites without increasing the toxicity, he advocates combining salvarsan, mercury and arsenic. The very gradual elimination of the two latter renders the treatment with the three practically successive, even when they are given together. The main point in treatment is to suspect possible tabes or paresis in every case of nervous trouble, even mere neurasthenia, insomnia, vertigo or pains, and any tendency to weakness or anemia or loss in weight in an old syphilitic. The serum should be examined for the Landau and Wassermann reactions and its power to digest brain tissue, and the cerebrospinal fluid should be examined for its albumin and cell content and its power to deviate complement.

Policlinico, Rome

October 24, XXII, No. 43, pp. 1457-1488

118 Purification of Vaccine. (Sulla purificazione del vaccino Jenneriano.) L. M. Spolverini.

119 *Gonorrheal Keratosis of the Penis. (Cheratosi blenorragica del glande.) G. C. Sanfilippo.

119. **Gonorrheal Keratosis.**—In the case reported the man was being treated for acute gonorrhea with involvement of one knee when circinated lesions of keratosis developed on the penis, commencing around the urinary meatus. They were the characteristic gonorrheal horny patches, and all subsided as the gonorrhea yielded to treatment, thus confirming the gonorrheal nature of the affection. It was the young man's second experience with gonorrhea after an interval of five years.

Riforma Medica, Naples

October 16, XXXI, No. 42, pp. 1149-1176

120 Technic for Making Antityphoid Vaccine. (Alcune norme di tecnica per la preparazione dei vaccini del tipo antitifico. Coltivazione dei germi e dosaggio dei vaccini.) F. Porcelli-Titone.

121 Three-Day Fever at Naples. C. Martelli.

October 23, No. 43, pp. 1177-1204

122 Classification and Treatment of Arrhythmias. (Sulla terapia delle cardiopatie. I.) G. Rummo.

123 Metabolism of Nitrogen in Exudates. (Ricerche cliniche e sperimentali sul metabolismo dell'azoto negli essudati.) F. Alzona. Commenced in No. 42.

Brazil-Medico, Rio de Janeiro

October 2, XXIX, No. 37, pp. 289-296

124 Action of Pyrethrum on Mosquitos. A. da Costa Lima.

October 16, No. 38, pp. 297-304

125 Brazilian Species of Genus Tetrameres Cliplin, 1846. L. Travassos.

126 Urethroscopy in Men. A. Pereira. To be continued.

Semana Medica, Buenos Aires

August 5, XXII, No. 31, pp. 155-182

127 The Oscillometer in Diagnosis of Mitral Valvular Disease. R. A. Bullrich.

128 Encouraging Results with Radium Treatment of Certain Affections of the Middle and Internal Ear. (Radiumterapia en algunas afecciones del oido.) D. J. Spinetto.

129 The Pulse with Heart Disease. (El pulso en las enfermedades del corazon.) E. Rodriguez. Concluded in No. 32.

August 12, No. 32, pp. 183-210

130 History and Present Status of Serotherapy of Bubonic Plague. J. Moreno. Concluded in No. 34.

August 19, No. 33, pp. 211-238

131 *Severe Poliomyelitis with Recovery Under Injections of Convalescent's Serum. G. A. Alfaro and J. M. Hitce.

132 Inflatable Girdle to Sustain Sagging Stomach. (Ptosis gastrica y cintura neumatica hypogastrica de Enriquez.) J. F. M. Gomez.

133 Technic for Testing Antitetanus Serum. G. Tizzoni and P. Perrucci.

August 26, No. 34, pp. 239-266

134 Present Status of Arteriosclerosis. C. P. Mayer. Commenced in No. 32.

135 Case Showing Danger of Mistaking Fibroma Under the Mucosa for Retained Scrap of Placenta. F. A. Deluca.

131. **Serotherapy of Acute Poliomyelitis.**—Alfaro and Hitce report the case of a 7 months' babe completely paralyzed by the fourth day of acute poliomyelitis; swallowing was difficult and respiration shallow and irregular. As the condition was growing worse, 2 c.c. of serum from two children who had had the disease a few months before was injected into the child's spinal canal the seventh day of the disease. Improvement was evident, and it continued to progress under further daily injection of 1.5, 2 or 3 c.c. of the serum, all the paralysis subsiding. There was no local or general reaction to any of the injections, and a total of 25 c.c. was thus injected

in the course of two weeks. The child was soon completely restored. They followed Netter's technic. The three middle injections were of serum from a young woman with diffuse myelitis; the diagnosis of poliomyelitis proved a mistake in this case.

Russkiy Vrach, Petrograd

XIV, No. 36, pp. 841-864

136 *War Psychoses. A. V. Gerver. Commenced in No. 34.
137 Indophenol Oxidase in Tissues of Animals, and the Variations Caused by Staphylococcus Infection. B. I. Slevtzoff and L. N. Chernevsky.
138 *Vaccination Against Gaseous Gangrene. V. I. Nedrigailoff.
139 *The Method of Rowntree and Geraghty in Functional Diagnosis of Renal Diseases. E. M. Naroditzky.
140 *Experimental Infection of Siberian Marmot with Plague During Hibernation. N. A. Gaisky.

No. 37, pp. 865-888

141 Operative Treatment of Hernia. B. K. Finkelstein.
142 *Sequestration of the Liver After an Operation for Acute Appendicitis. L. G. Stukkey.
143 Acanthosis Nigricans. P. S. Grigorieff.
144 *Tetany Successfully Treated with Parathyroid Extract. D. M. Rossiysky.
145 Apraxia. S. A. Liass.

136. **Psychoses in the Russian Army; Absence of Alcoholic Insanity.**—Gerver divides the war psychoses into three classes: To the first belong psychoses arising in persons without any hereditary taint, being caused solely by the war environment and violent emotions resulting from battles. To the second class belong psychoses that would develop in ordinary circumstances of peace, but which were prematurely brought on by the war. Here belong dementia praecox, manic-depressive insanity, paranoia, paralytic dementia, etc. To the third class belong traumatic psychoses, caused by wounds and contusions. The psychoses of the first category do not differ in any way from the old types, but they may be subdivided into those caused by battles, by trench life, and the rear guard psychoses. Clinically they belong to the acute mental disorders, amentia and asthenic psychoses. Frequently they develop in the form of neurasthenic insanities. The specific character of war psychoses of all the three classes consists in the peculiar coloring and the character of the hallucinations, illusions, delusions, and the patient's conduct. The contents of the hallucinations and delusions are the experiences of the war life. Another feature is depression, followed often by excitement, and confusion of consciousness. The character of the battle (artillery, infantry, bayonet attacks, etc.), the duration of the war life at the front, the course of military events (offensive or defensive, victories or defeats), and the general morale of the army determine the larger or smaller proportion of psychoses that develop. Gerver further claims that in the present campaign the amount of psychoses is comparatively small, about 1 per thousand; in the previous wars the rate was 2 or 3 per thousand. The main cause of the decreased rate is the total absence of alcoholism. In the Russo-Japanese War this was responsible for one third of all the psychoses. In the present campaign there has not occurred a single case of alcoholic insanity.

138. **Vaccine Against Gas Gangrene.**—Nedrigailoff offers a rapid method of preparing a vaccine against gaseous gangrene. He used as material the exudate from an incised gangrenous ulcer and two pieces of diseased muscles and subcutaneous tissue which were ground in a mortar and placed in a small tube with the fluid, mixed with three times the amount of normal salt solution. The corked tube was then thoroughly shaken for ten or fifteen minutes. The contents of the tube were then filtered through a small piece of cotton and through a Chamberland or Berkefeld filter. Twenty to thirty minutes later a sufficient amount of sterile, reddish fluid accumulates ready to use. Altogether it takes two hours to prepare the vaccine. Another method, by heating, can be used in the absence of a Chamberland or Berkefeld candle, but the heating method takes six to eight hours. The vaccine prepared by the first method was used on a guinea-pig which received 5 c.c. hypodermically; a painful edema developed which disappeared in three days. He had no opportunity to use it on men, as in his cases of gas infection death rapidly followed.

139. **The Phenolsulphonephthalein Test of Kidney Functioning.**—Naroditzky studied this reaction in thirty-seven cases of various renal lesions and in nine subjects with apparently healthy kidneys. The test was always made in the morning, the reagent having been injected in the upper portions of the gluteal muscles or into the lumbar muscles. Twenty to thirty minutes before the injection the patient was given 200 or 400 c.c. of water. The test dose was 6 mg. dissolved in 1 c.c. of water. The urine should be examined for the presence of the reagent immediately, or not later than two hours after the injection. He found that the phenolsulphonephthalein test is a good aid in the diagnosis of functional renal activity even in those cases in which other methods fail, but it is important to determine the amount of the coloring substance eliminated during the first hour. This test differentiates between parenchymatous and interstitial forms of nephritis. In mixed and parenchymatous nephritis, as well as in other renal affections, it is possible to determine, to a certain extent, the involvement of the interstitial tissue. In acute cases, repeated examinations may reveal improvement in the state of the kidneys. Naroditzky also found that with reduced elimination of the phenolsulphonephthalein there is increase of nitrogen in the blood, especially in interstitial nephritis. The phenolsulphonephthalein does not indicate a general retention of nitrogen in the blood, only that a part of the nitrogen is retained which is normally voided by the affected kidney. Therefore, the power of the kidney to eliminate nitrogen can be easily determined by this test without resorting to complicated and difficult methods of determining the nitrogen rate in the patient's blood.

140. **Experimental Inoculation with Plague.**—Gaisky infected Siberian marmots with a forty-eight hours old agar culture of bubonic plague bacilli while the animals were in a condition suggesting winter sleep. A dose of one-millionth or a tenth of one-millionth of a gram kills them in from ten to twenty-one days, while they are in this hibernating condition. Three animals were experimented on with the same dose when they were in deep sleep, and the results were negative. It seems, therefore, that in a state of deep winter sleep the marmots are immune against bubonic plague infection.

142. **Sequester Cast Off from the Liver.**—Stukkey reports an unusual case of acute appendicitis which though operated on twenty-two hours after its clinical onset, became complicated with an abscess and gangrene of a portion of the liver. The abscess showed the twenty-first day after the operation and was due to streptococcus infection. It was drained, but twenty-four days later a sequester of the liver, 7 cm. long and 1.5 to 2 cm. wide, was removed through the wound. The patient recovered about four months later and is now well.

144. **Parathyroid Treatment of Tetany.**—Rossiysky reports a case of tetany in a young man successfully treated with hypodermic injections of parathyroid extract. Altogether thirty-five injections were made, with 2 c.c. of the extract as a single dose. The subjective condition improved considerably, with complete disappearance of the objective signs (Trousseau, Erb, Chvostek) which were very pronounced before the injections were given. No other treatment was administered. Complete recovery followed.

Hospitalstidende, Copenhagen

October 20, LVIII, No. 42, pp. 1075-1102

146 Fatal Intestinal Involvement in Measles in Two Infants. (Enteritis ved Morbilli.) K. Secher.

October 27, No. 43, pp. 1103-1126

147 Congenital Infrapapillar Atresia of the Duodenum Corrected by Anastomosis. N. P. Ernst.
148 Diffusion of Gases in Air in Lungs. III. (Om Lungeluftblandingers Homogenitet. Fortsatte Undersøgelser.) C. Sonne.

Ugeskrift for Læger, Copenhagen

October 21, LXXVII, No. 42, pp. 1639-1672

149 Detailed History of Diabetic with Recurring Coma Kept Under Control. (Tilfælde af Coma diabeticum. Alkalibehandling, Diætbehandling.) V. Scheel.